

PEDIATRIC NEUROSURGERY GUIDE FOR PARENTS

A simple and practical handbook for families



Dear parents

Greetings and welcome

. This booklet has been prepared to help you better understand pediatric neurosurgical conditions and their treatment options. Childhood is one of the most delicate stages of life, and parental awareness plays a major role in supporting a child's physical and mental well-being.

In this guide, we have tried to present medical information in a simple and easy-to-understand manner so that, alongside your specialist, you can make the best decisions for your child's health.

We hope that reading these materials brings you greater peace of mind and confidence throughout your child's treatment journey.





Dr. Ehsan Moradi **Pediatric Neurosurgeon**

Dr. Moradi is dedicated to providing safe and effective treatment for children by applying the latest medical knowledge and modern surgical techniques. In addition to his clinical work, he is also active in teaching and research, and has published multiple scientific articles in the field of pediatric neurosurgery.

Introduction

- Graduate of the National Organization for Development of Exceptional Talents (NO-DET) high school, ranking among the top students in the national university entrance exam
- Medical degree (M.D.) from Mashhad University of Medical Sciences
- Neurosurgery residency at Shiraz University of Medical Sciences
- Fellowship in Pediatric Neurosurgery at Tehran University of Medical Sciences
- Associate Professor at Shahid Beheshti University of Medical Sciences, Tehran, Iran. Actively involved in research related to pediatric neurosurgical disorders
- Extensive experience in specialized pediatric neurosurgical procedures, including craniosynostosis, hydrocephalus, brain tumors, and congenital spinal disorders
- Participation in numerous national and international neurosurgery congresses



Pediatric Neurosurgery in Simple Language

The brain is one of the most complex organs in the body. It controls all of our daily activities from movement and speech to thinking, learning, and even emotions. In children, the brain is still growing and developing, which makes protecting its health even more important.

Many pediatric neurosurgical conditions come with warning signs that, if recognized early, can be treated effectively. The main difference between childhood disorders and adult conditions is that a child's brain is still developing; therefore, any damage or untreated problem can affect their future growth and abilities.

Parents should understand that paying attention to warning symptoms, visiting the doctor regularly, and completing recommended screenings are the best ways to ensure their child's neurological health.





Common Pediatric Neurosurgical Conditions

Treatment

The primary treatment for craniosynostosis is surgery. This procedure is usually performed at a young age to ensure that the brain has enough space to grow and that the skull shape can be corrected. The type of surgery depends on the severity and the specific sutures involved. In many cases, minimally invasive techniques can be used when the child is under 6 months old.

The good news is that most children recover well after surgery, lead healthy and normal lives, and their intelligence is not affected by this condition. Early diagnosis and prompt consultation with a specialist are key to successful treatment.



What is Craniosynostosis?

Craniosynostosis refers to the premature closure of one or more of the skull sutures in an infant. Normally, these sutures remain open for several years to allow the brain enough space to grow. When a suture closes too early, the skull may become misshapen and, in some cases, pressure inside the skull may increase.

Symptoms:

- Abnormal head shape (elongated, narrow, or asymmetrical)
- Bulging or sunken areas on different parts of the skull
- In some cases, developmental delay or vision problems



Common Pediatric Neurosurgical Conditions

Treatment:

The most common treatment is the placement of a ventriculoperitoneal (VP) shunt. A shunt is a thin, flexible tube that drains excess fluid from the brain through a subcutaneous pathway to another part of the body typically the abdomen where it can be absorbed.

Post-shunt care includes regular follow-ups with the doctor and careful attention to signs of infection or blockage.

In certain cases, depending on the type of hydrocephalus and the neurosurgeon's assessment, endoscopic techniques such as ETV (Endoscopic Third Ventriculostomy) may be used as an alternative treatment.

Hydrocephalus and Ventriculoperitoneal (VP)

Shunt

Hydrocephalus refers to the abnormal accumulation of cerebrospinal fluid (CSF) within the brain's ventricles. This buildup can cause the head to enlarge and may increase pressure on the brain.

Symptoms:

- Abnormally rapid or excessive head growth
- Bulging fontanelle (soft spot on the head)
- Recurrent vomiting
- Irritability or excessive sleepiness
- Double vision
- Difficulty in moving the eyes upward (sunset eye sign)





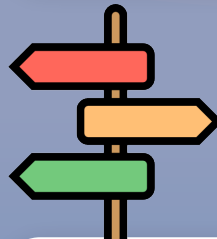
Common Pediatric Neurosurgical Conditions

Treatment

Depending on the type and location of the tumor, treatment may include surgery, chemotherapy, or radiotherapy. The main goal is to remove or shrink the tumor while preserving as much normal brain function as possible. Fortunately, many pediatric brain tumors can be effectively managed when diagnosed and treated early.

Pediatric Brain Tumors

Brain tumors in children differ in several ways from those in adults and may present with symptoms such as persistent headaches, early-morning vomiting, balance problems, double vision, or changes in behavior.



Warning signs:

- Progressive headache
- New-onset seizures
- Blurred or reduced vision
- Difficulty in walking
- Sudden decline in school performance





Common Pediatric Neurosurgical Conditions

Treatment

Most children respond well to anti-seizure medications. In certain cases, surgery or modern techniques such as vagus nerve stimulation (VNS) can be helpful. Parents should know that with proper treatment, most children with epilepsy can lead normal, healthy lives.

Epilepsy and Seizures

Epilepsy is one of the most common neurological disorders in children. It is caused by abnormal electrical activity in the brain and appears as recurrent seizures.

Symptoms

- Sudden staring spells
- Involuntary movements of the arms or legs
- Brief or prolonged episodes of loss of consciousness



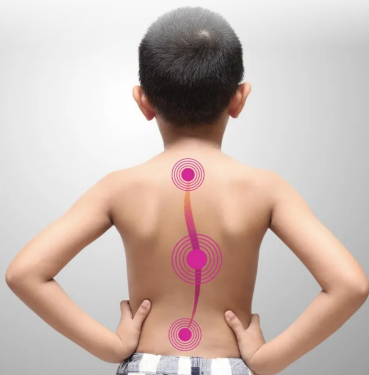


Common Pediatric Neurosurgical Conditions

Treatment

Severe cases often require surgery to close the defect and release the spinal cord. In addition, occupational therapy and physiotherapy can greatly improve the child's quality of life.

A key point in these patients is the importance of continuous monitoring of urinary function and orthopedic status to prevent long-term complications.



Spinal Disorders (Spina Bifida and Others)

Spina bifida is a congenital neural tube defect in which the spinal column does not fully close, affecting part of the spinal cord. The severity ranges from mild to severe

Symptoms:

- A visible sac or swelling on the back
- Weakness or paralysis of the limbs
- Bladder or bowel problems



Early Screening and Diagnosis



One of the most important factors in successfully treating pediatric neurological conditions is early diagnosis. Many disorders, when identified at a young age, can be managed with simpler treatments and lead to much better outcomes.



Neurological screening includes evaluating a child's motor, language, cognitive, and social development. A specialist examines the child clinically and, if needed, may request additional tests or imaging studies to assess the brain and nervous system.



Timely medical consultation and proper screening allow many conditions to be detected and treated before serious complications develop.

Warning signs for parents:

- Delay in sitting, walking, or speaking
- Abnormal head shape or unusual head-growth patterns
- Seizures or unusual movements
- Excessive irritability or unusual sleepiness
- Vision or hearing problems



Treatment Methods and Surgical Options

The treatment of pediatric neurosurgical conditions varies depending on the type of disorder. Some issues can be managed with medications or regular follow-up, while more serious cases may require surgery as the most effective option.

With today's advancements in surgical techniques and modern medical equipment, these procedures are performed with greater safety and precision. The primary goal of pediatric neurosurgery is not only to treat the condition but also to ensure proper brain development and improve the child's overall quality of life.



Common Surgical Procedures in Children

- Craniostomy surgery to correct skull shape
- Placement of a ventriculoperitoneal (VP) shunt for hydrocephalus
- Surgical removal of brain tumors
- Corrective spinal surgeries for congenital spinal defects
- Endoscopic brain procedures for treating hydrocephalus



Common Treatment Approaches

- Medication therapy: To control seizures or reduce intracranial pressure
- Physiotherapy and occupational therapy: To improve motor and cognitive abilities
- Speech therapy: For language and communication difficulties



Head Trauma in Children (Brain and Skull Injuries)



Head and brain trauma in children refers to injuries caused by impact, falls, accidents, or any significant blow to the head. Because a child's skull is more delicate and their brain is still developing, these injuries can be more dangerous compared to adults.

Warning Signs of Head Trauma in Children

- Loss of consciousness, even for a few seconds
- Repeated vomiting after the injury
- Unusual sleepiness or severe irritability
- Seizures or abnormal movements
- Clear or bloody discharge from the ear or nose
- Severe headache or visible deformity of the skull





Head Trauma in Children (Brain and Skull Injuries)



The Importance of Immediate Medical Attention

Every head injury in a child should be taken seriously. Even if the child appears normal after the incident, internal bleeding or brain injury may still be present and can only be detected through imaging studies. Prompt evaluation in the emergency department can prevent serious complications.

Parents should remember: prevention is the best way to protect children from head injuries. Using car safety seats, wearing helmets during cycling, and supervising play activities significantly reduce the risk of trauma.

Treatment and Care

Depending on the severity of the trauma, treatment may range from rest and observation at home to hospitalization or emergency surgery. After a brain injury, regular follow-up visits and sometimes rehabilitation are necessary to help the child return to normal daily activities.



Post-Surgical Care for Children

General Home Care

- Pay close attention to the surgical wound and dressing; if there is any discharge or redness, contact your doctor immediately.
- Give all prescribed medication especially antibiotics and pain relievers exactly as instructed.
- The surgical dressing should usually be cleaned daily with sterile saline.
- After returning home, short showers are generally allowed, but the surgical area must be dried and re-dressed afterward.
- Swelling around the face and eyes commonly appears 2-3 days after head surgery; this is normal and not a cause for concern.



After pediatric neurosurgery, the role of parents at home becomes extremely important. Proper care can speed up recovery and reduce the risk of complications.



Post-Surgical Care for Children



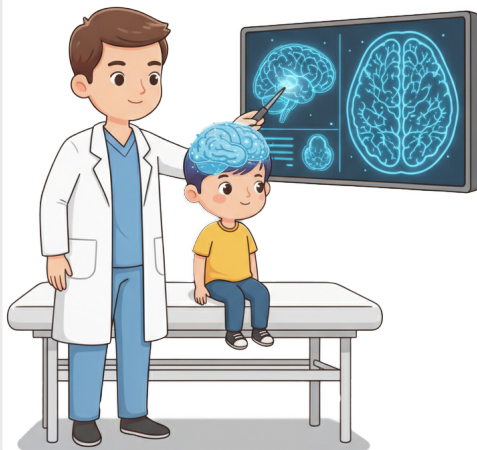
- After spine surgery, it is usually best for the child to lie on their stomach, keeping the surgical site elevated.
- Protect your child from any falls or head injuries during the first few months after surgery.
- Provide healthy, nutritious meals to support healing and strength.
- Ensure your child gets enough rest and sleep to restore their energy.



Post-Surgical Care for Children

When to See the Doctor

- If the child develops fever, severe irritability, repeated vomiting, seizures, or fluid leakage from the wound
- If unusual sleepiness or decreased alertness appears
- For regular follow-up visits as scheduled by the surgeon to monitor healing and growth



With proper care, most children can gradually return to their normal daily activities after surgery.





Frequently Asked Questions (FAQ)

✦ Can my child play sports after surgery?

Yes. After the recovery period and with the doctor's approval, children can resume normal activities, including light sports. Activities with a high risk of head injury should be approached with caution.

✦ Do neurological conditions affect my child's intelligence?

Most children maintain normal intelligence and abilities after appropriate treatment. For example, in craniosynostosis, the abnormal head shape affects appearance but usually does not impact intelligence.

✦ Can the condition come back?

Some conditions such as hydrocephalus require lifelong follow-up. A VP shunt may need adjustment or replacement over time. However, many pediatric neurosurgical disorders are completely treatable with successful surgery.

✦ What about my child's future education and career?

With timely treatment and proper care, most children can grow up to have a completely normal and successful future. Parental support and regular follow-up play a major role in ensuring this.





Nutrition and Healthy Lifestyle Tips

! Healthy brain development depends not only on medical treatment but also on proper nutrition and lifestyle habits.

Healthy lifestyle habits

- Adequate sleep: Children need regular, sufficient sleep for brain recovery and learning
- Play and physical activity: Exercise and group play strengthen social skills and brain coordination; generally, ३० minutes of light aerobic exercise is recommended daily after surgery
- Limit screen time: Excessive use of electronic devices can negatively affect concentration and sleep

Brain-friendly nutrition:

- Omega-3 fatty acids (found in salmon, walnuts, flaxseed) to support memory and focus
- Proteins (meat, eggs, legumes, dairy) for building brain cells
- Iron and zinc (red meat, lentils, nuts) to prevent poor concentration and mental fatigue
- Colorful fruits and vegetables rich in vitamins and antioxidants to protect brain cells



By following these guidelines, parents can create the ideal environment for their child's physical and cognitive growth.



Fun Facts About a Child's Brain

About 60% of the brain is made of fat, which is why healthy fats are essential for brain development.

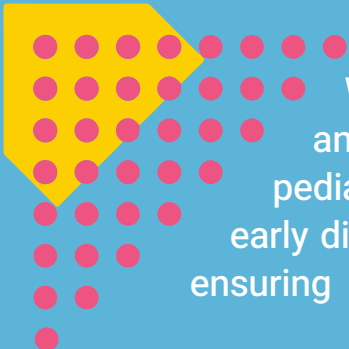
A child's brain forms more than one million new neural connections every second during the first three years of life!

Young children have exceptional language-learning abilities; their brains absorb new information like a sponge



The brain uses a tremendous amount of energy—around 20% of the body's total energy goes toward brain activity.

Play is not just entertainment; it is one of the most important tools for brain growth, creativity, and cognitive development.



We hope this booklet has provided simple and practical information about common pediatric neurosurgical conditions. Remember, early diagnosis and timely treatment are the keys to ensuring a healthy and bright future for children.

For appointments and consultation:

 Clinic Address: Sina Medical Building, Showari Alley,
Shariati Subway Station, Shariati Street, Tehran, Iran.

 Phone: +989001047221

 Whatsapp: +989001047221

 Website: www.drehsanmoradi.com

Social Media

 Instagram [drehsanmoradi](https://www.instagram.com/drehsanmoradi)

 Aparat https://www.aparat.com/dr_ehsanmoradi

Final Note

The health of a child's brain and nervous system shapes their future. Parental awareness, collaboration with specialists, and consistent follow-up are the three pillars of successful treatment. We are here to provide your child with the most advanced and reliable diagnostic and treatment services.





DOCTOR

EHSAN MORADI

PEDIATRIC NEUROSURGEON



Thanks to GPT5