

## Chiari II Malformation



PLAY PICMONIC

### Pathophysiology

#### Herniation of Cerebellum

##### Hermit-crab Silver Bell

Chiari II malformation is a downward displacement by more than five millimeters of the cerebellum (vermis and tonsils) and medulla through the foramen magnum. It occurs during fetal development. Chiari II malformation differs from Chiari I malformation, where displacement only involves the cerebellum tonsils. Two structures are involved in Chiari II and only one in Chiari I.

#### Herniation of Medulla

##### Hermit-crab Medusa

Chiari II malformation is a downward displacement of two structures. These structures are the cerebellum and medulla. Knowing these two structures will help in memorizing the characteristics of Chiari II malformation.

#### Through Foramen Magnum

##### Foreman Magnum

Chiari I malformation and Chiari II malformation together pass through the foramen magnum.

#### Noncommunicating Hydrocephalus

##### Nun-communicating Hydras-in-head

The downward displacement of Chiari II malformation can cause pressure on the brain resulting in non-communicating hydrocephalus, also known as obstructive hydrocephalus.

### Association

#### Aqueductal Stenosis

##### Aqueducts Stone

Aqueductal stenosis is a narrowing of the cerebral aqueduct, which can occur due to external compression of the mesencephalon. It's been associated with Chiari II malformation. It blocks the cerebrospinal fluid (CSF) in the ventricular system, resulting in obstructive hydrocephalus.

#### Myelomeningocele

##### Blood-cells Men-in-seal

Lumbosacral myelomeningocele is seen in 60-95% of cases of Chiari II malformation. Myelomeningocele occurs when the part of the spinal cord and meninges develop outside the body instead of inside.

### Diagnosis

## **MRI**

### **M-R-eyes Machine**

An MRI is used to diagnose patients with Chiari II malformation. It can show the downward displacement of the cerebellum and medulla. Other findings can also be seen in some cases, such as myelomeningocele, beaked tectal plate, and small posterior fossa.

## **Treatment**

### **Surgery**

#### **Surgeon**

Surgery aims to relieve symptoms, optimize nerve tissue decompression, reduce disease progression, and reconstruct normal cerebrospinal flow around the cerebellum. The primary surgery to treat Chiari malformation is called decompression surgery.

### **Supportive Therapy**

#### **Supportive IV Bags**

Supportive therapy may include the concern of neurogenic bowel, special feedings for neonatal feeding difficulties, and breathing support for apnea and respiratory failure.