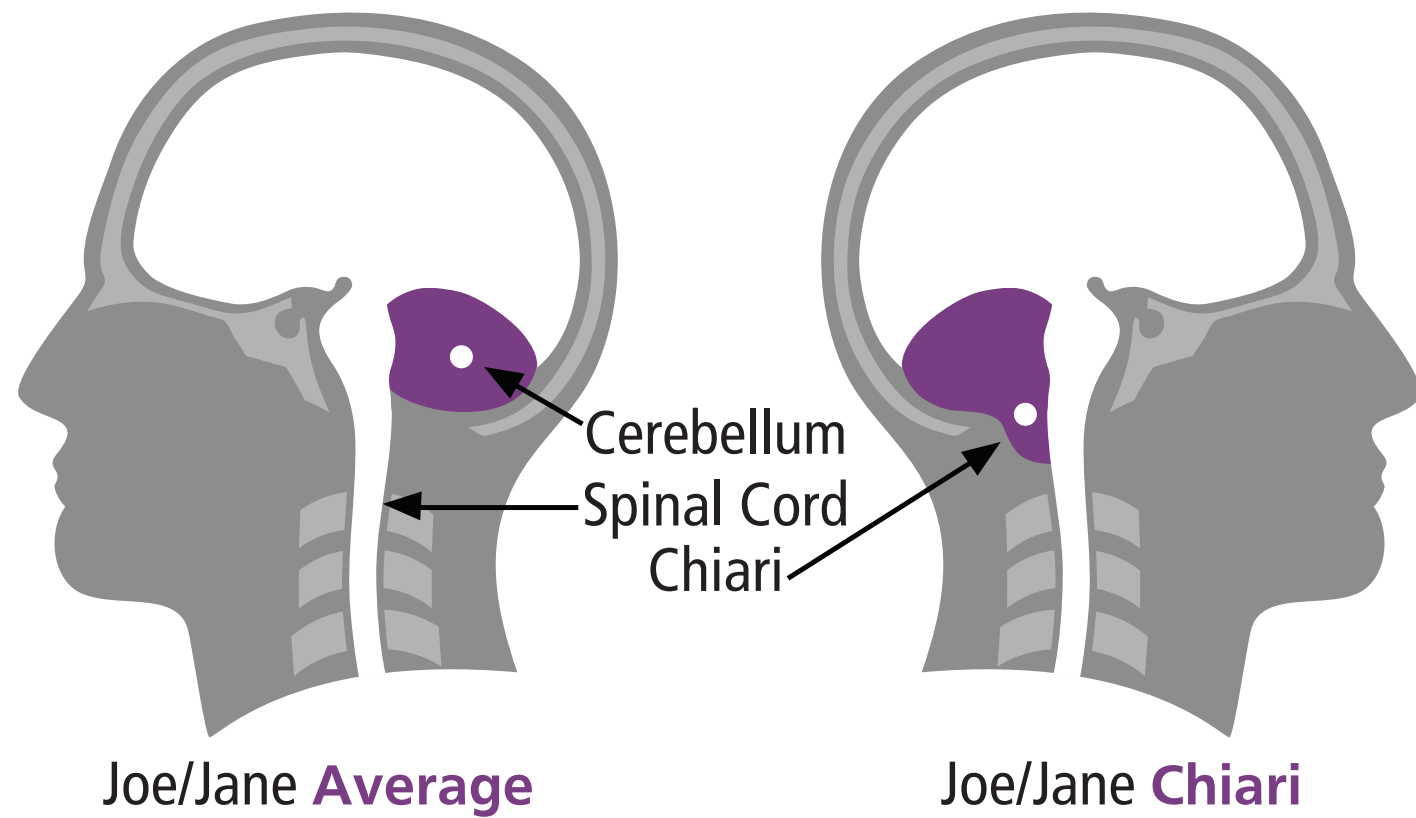


Treatment Options



Treat Symptoms Individually

Symptoms not severe enough for surgery
Patient does not want surgery
Other medical conditions to address first

Patients tend to find their own way of managing symptoms, whether adopting lifestyle changes, restricting activities, changing careers, trying alternative medicine or conversing with other Chiari patients on what works for them.

Surgery

Surgical Steps

Craniectomy-

A piece of the skull is removed

Laminectomy-

Part of one or more vertebrae are removed

Duraplasty-

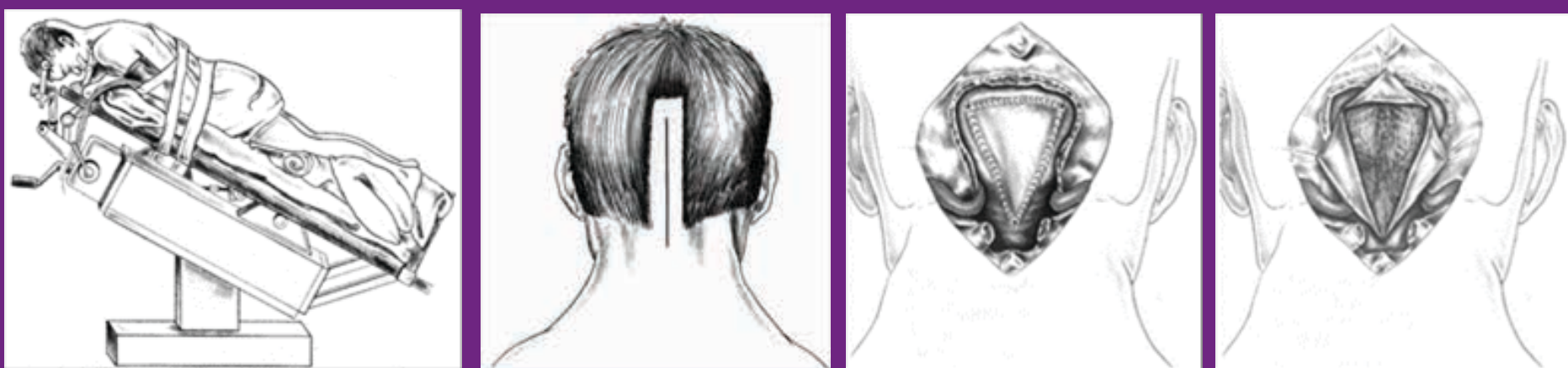
The covering of the brain is opened and a patch is sewn in to make it bigger

Tissue removal-

Cerebellar tonsils are sometimes cauterized (controversial)

Plate insertion-

Mesh is inserted where skull was removed



Images courtesy of Dr. Ghassen Bejjani

Wait & See

Because there is no definitive test for symptomatic Chiari, and because people can have herniation of the cerebellar tonsils without symptoms, many people are advised to wait and see

Symptoms, if present, may not be due to Chiari

For example, experiencing frontal or more general headaches as opposed to headaches in the back of the head. Headaches are very common and can be caused by many different things

Incidental Diagnosis

For example, a child has an MRI after head trauma during a sporting event and is found to have herniation of the cerebellar tonsils, but does not have symptoms associated with Chiari

Doctor's Judgement

An experienced neurosurgeon does not think the symptoms will respond to surgery

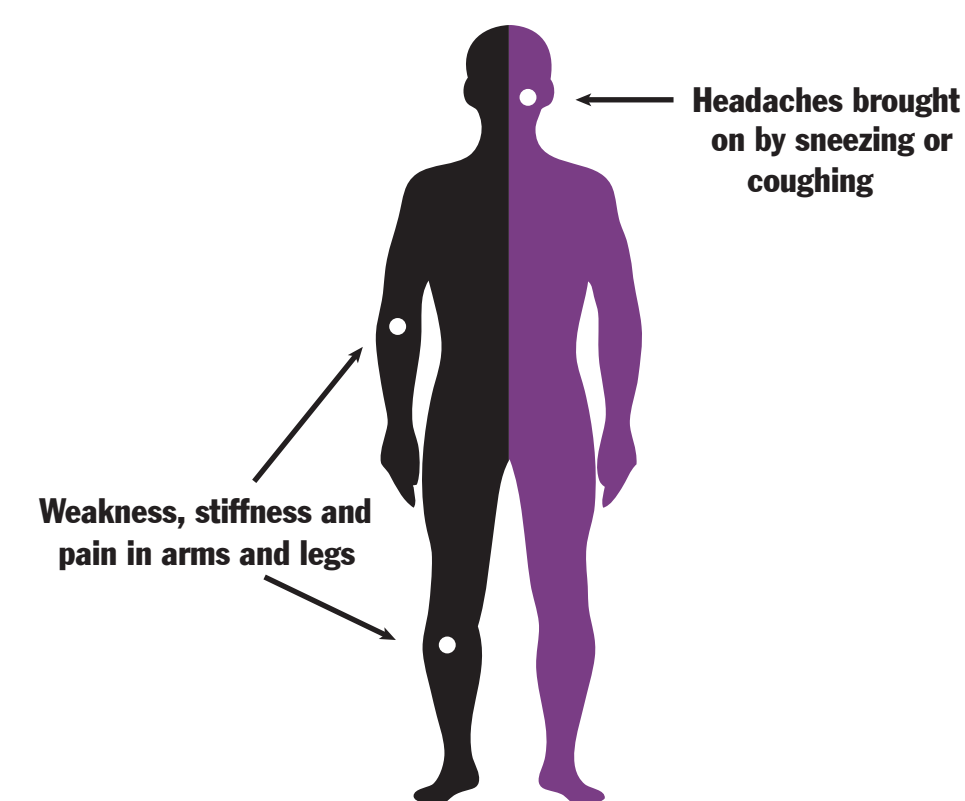
Procedure

Monitor the condition with regular MRIs

Regular Check-ups

Be on the look out for Chiari type symptoms

Medical Center	
NAME <u>Patient A</u>	AGE <u>32</u>
ADDRESS <u>456 Lanes</u>	DATE <u>6/6/18</u>
Rx	
Medicine for pain	
Restricted Activities	
Follow-up MRI in 6 mos.	
<u>Dr. Physician MD</u>	
SIGNATURE	
LABEL	
REFILL 0 1 2 3 4 5 PRN NR	



Medical Center	
NAME <u>Patient B</u>	AGE <u>24</u>
ADDRESS <u>123 Ave.</u>	DATE <u>6/6/18</u>
Rx	
No Heavy Lifting	
Medicine for headache	
Call if symptoms worsen	
<u>Dr. Physician MD</u>	
SIGNATURE	
LABEL	
REFILL 0 1 2 3 4 5 PRN NR	

Surgical Variations/Controversies

How much bone is removed

Whether the dura is opened at all

What type of material is used for a dural graft (patch)

Whether any brain tissue is removed

Whether a mesh is put in to take the place of the removed piece of skull

American Association of Neurological Surgeons reported in 1997 that approx. 2,000 surgeries were performed each year by only 40% of neurosurgeons.

In 2007 11,000 surgeries were being performed each year by approx. 75% of neurosurgeons, a significant increase.

Dural patches have been used in many types of surgeries for more than 100 years, and doctors have tried many kinds of materials. In the 1800's both rubber and gold foil were used! In the 20th century, gelatin and silicone products were used as dural substitutes. More recently, patches have come from cadaver tissue, cow tissue, and completely synthetic materials.

Early data from the Chiari 1000 project indicates that pediatric patients respond better to decompression surgery than adults. Specifically, 59% of pediatric patients experienced either a significant improvement or a complete resolution of symptoms, compared to 42% of adult patients.