

## Neck Fracture After Decompression Surgery

Case Studies is a feature designed to highlight interesting patient cases reported in the research. Given the lack of knowledge about CM/SM, much of the published research comes in the form of case studies - doctors describing one or two patients they have seen and treated - as opposed to rigorous scientific studies. While this type of publication doesn't advance the scientific cause as much, it does give us a window into some of the issues surrounding CM/SM, including lasting side effects and related conditions. And hopefully, some of our readers will say, "Hey, that's just like me!" and know they are not alone in what they are going through.

### **CASE 1: Neck Fracture After Decompression Surgery**

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**Doctors:** Dr. Brian O'Shaughnessy et al., Northwestern University

#### **Patient 1:**

- 18 year old woman
- Headaches, tingling in arms, reduced sensation on right side
- MRI revealed Chiari malformation and a syrinx in the lower cervical/upper thoracic region
- Decompression surgery resulted in symptom improvement and resolution of the syrinx
- 5 months after surgery developed worsening neck pain which had started after a violent coughing episode
- X-rays demonstrated a fracture to the front part of the C-1 vertebra
- Wore a hard neck collar for 3 months and took pain killers
- Pain persisted and imaging revealed the fracture had worsened
- Underwent surgery to fuse her top 3 vertebra
- 6 months later, the neck pain was gone and images showed the fracture had completely healed

#### **Patient 2:**

- 49 year old woman
- History of high blood pressure, diabetes and other serious conditions
- Developed headaches and numbness/tingling in right side of face, arms, and legs; also had difficulty swallowing
- MRI revealed a Chiari malformation but no syrinx
- Underwent successful decompression surgery
- 6 months after surgery developed severe neck pain with no apparent trigger
- X-ray revealed nothing
- CT (computed tomography) revealed a fracture in the front of the C-1 vertebra
- Was treated conservatively with a hard neck collar for 3 months
- Pain persisted, so she underwent surgery
- 3 months after surgery, pain was gone and images showed the fracture was healing

#### **Observations:**

- Despite the fact that a laminectomy is routinely performed in Chiari decompressions, cervical instability has generally not been discussed (in the medical literature) as it relates to this procedure
- One study did show that 3% of children who had a C-1 laminectomy showed signs of instability, 22% of those who had a C-1 and C-2 laminectomy showed signs of instability, and 100% of those who had a C1-C3 laminectomy showed signs of instability

## Definitions

**basilar invagination** - condition sometimes associated with Chiari, where the C2 vertebra is displaced upward, potentially compressing the brainstem

**cerebellar tonsils** - portion of the cerebellum located at the bottom, so named because of their shape

**cerebellum** - part of the brain located at the bottom of the skull, near the opening to the spinal area; important for muscle control, movement, and balance

**cerebrospinal fluid (CSF)** - clear liquid which surrounds, and protects, the brain and spinal cord

**cervical** - the upper part of the spine; the neck area

**Chiari malformation** - condition where the cerebellar tonsils are displaced out of the skull area into the spinal area, causing compression of brain tissue and disruption of CSF flow

**decompression surgery** - common term for any of several variations of a surgical procedure to alleviate a Chiari malformation

**laminectomy** - surgical removal of part (the bony arch) of one or more vertebrae

**magnetic resonance imaging (MRI)** - diagnostic test which uses a large magnet to create images of internal body parts

**neonatologist** - a doctor who specializes in treating high-risk and complex cases involving newborns

**spinal anesthesia** - procedure which involves injecting a pain killer directly into the spinal area

**syringomyelia (SM)** - neurological condition where a fluid filled cyst forms in the spinal cord

**syrinx** - fluid filled cyst in the spinal cord

**thoracic** - the middle part of the spine; chest area

**vertebra** - segment of the spinal column (see [Spinal Anatomy](#))

- C-1 fracture should be considered when there is delayed neck pain after decompression surgery

**Editor's Note:** For decompression surgeries that are performed transorally - meaning through the mouth - often the vertebrae are fused at the same time as the decompression because of instability issues. This type of surgery is usually performed when there is significant basilar invagination. Although this is the first I have heard of cervical fractures with a standard Chiari decompression, in looking back at my own experience, a couple months after my surgery my doctor ordered an MRI where I bent my neck at different angles to check for instability. Luckily there was no instability and he said, "The good news is your head's not going to fall off if you sneeze!"

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