

## Definitions

**arthropathy** - damage to a joint

**cerebrospinal fluid (CSF)** - clear liquid in the brain and spinal cord, acts as a shock absorber

**cervical** - having to do with the upper portion of the spine located in the neck area

**Charcot joint** - progressive, often painless, destruction of a joint due to loss of nerve function

**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

**ICP** - intracranial pressure, pressure of CSF inside the skull area

**neuropathic** - arising from nerve damage

**orthopedic** - type of medicine dealing with bones, muscles, and joints

**perinatology** - type of medicine dealing with the period around childbirth, both before and just after

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

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

**thoracic** - having to do with the middle part of the spine in the chest area

## Skydiving, Bad Elbows, and Labor Management

Case Studies is a new 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: Skydiving

**Reported In:** New England Journal of Medicine (Letter to the Editor), July 17, 2003.

**Doctors:** Dr. Charles Wrobel & Dr. Kevin Taubman, Kern Medical Center, Bakersfield, CA.

#### **Patient 1:**

- 30 year old male
- Owns a skydiving school
- Over 1500 jumps without injury
- Developed pain in the chest/mid-back area
- MRI revealed a syrinx
- Continued to jump, but less frequently
- 2 years later, symptoms worsened, syrinx had enlarged

#### **Patient 2:**

- 27 year old male
- Over 1000 jumps
- After a hard parachute opening, developed neck pain and stiffness
- One month later developed tingling and numbness in right arm
- MRI revealed a 15mm long syrinx in the cervical area
- Patient stopped skydiving, symptoms went away and the syrinx stabilized

#### **Observations:**

- Syrinxes probably formed from repeated rapid decelerations during skydiving
- Jumpers undergo forces 5 - 7 times the force of gravity (5-7g's) when the parachute opens

**Ed Note:** *This case provides further evidence that trauma is a triggering event for syringomyelia. There have been anecdotal reports of people becoming symptomatic after riding roller coasters which entail similar (or even greater) forces. Clearly not everyone who rides a roller coaster or jumps from a plane develops SM, so I believe there is still an unknown component which makes some people more susceptible to developing a syrinx than others.*

### CASE 2: Bad Elbow

**Reported In:** Orthopedics (Case Report), July 2003

**Doctors:** Dr. Satoshi Nozawa et al., Dept. of Orthopedics, Gifu University, Japan

#### **Patient 1:**

- 57 year old female
- Painless instability and swelling of left elbow
- Had endured left shoulder numbness for 17 years

- X-ray of the elbow revealed destructive arthropathy (Charcot joint)
- MRI revealed Chiari I malformation and a syrinx from C2-C7
- Patient underwent decompression surgery
- 2 years later, the syrinx was smaller, there was less numbness in the shoulder, and the destruction of the elbow had stopped progressing

**Observations:**

- Charcot joints - joints undergoing damage due to loss of nerve function - in general are more common in the legs and feet
- Because neuropathic joints have lost nerve function, they are usually painless, but they become unstable allowing the bones to grind against each other and destroy the joint over time
- Neuropathic elbows - although uncommon - have been linked to SM
- Treating the underlying cause - SM - can stop the progression of a neuropathic joint

**Ed Note:** *Many syringes are located in the cervical region which supplies nerves to the shoulders and arms. Thus if a syrinx damages nerves in this area, a patient may develop problems with their shoulders and elbows. Anecdotally, many SM patients have shoulder problems even after decompression surgery.*

**CASE 3: Labor Management**

**Reported In:** Journal of Perinatology, Nov., 2002

**Doctors:** Jason Parker, O.D. et al., Maternal-Fetal Medicine, Madigan Army Medical Center, Tacoma, Washington

**Patient 1:**

- 26 year old female, first pregnancy
- Diagnosed with syringomyelia in childhood, treated with a shunt placement
- During labor, developed headaches, weakness, and numbness
- Concern was labor was causing elevated ICP leading to further spinal compression
- Baby was delivered immediately by cesarean section
- Slowly loaded epidural was used for anesthesia to minimize further complications
- Baby was healthy, patient's symptoms resolved within 24 hrs

**Patient 2:**

- 30 year old female, first pregnancy
- Known to have Chiari malformation, syringomyelia, and a seizure disorder
- Neurological symptoms were stable
- Slowly loaded epidural was administered early in labor
- Patient was told not to push during second stage of labor
- Baby was delivered vaginally using forceps
- Baby was healthy, patient had no neurological complications

**Observations:**

- Pushing during labor can increase intracranial pressure (ICP) causing further compression, worsening neurological symptoms, and potentially more herniation of a Chiari malformation
- Despite the risks, labor was successfully managed by either cesarean section or vaginal delivery with no maternal pushing
- An epidural where the anesthesia is slowly introduced can lower the risks associated with regional anesthesia and avoid the risks of a general anesthesia

**Ed Note:** *Although this case highlights some of the problems that moms-to-be must deal with, it also shows cases with successful outcomes.*

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