Definitions

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

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

duraplasty - surgical technique where a patch is sewn into the dura, the tough covering of the brain and spinal cord

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

MRI - Magnetic Resonance Imaging; diagnostic device which uses a strong magnetic field to create images of the body's internal parts

post-traumatic syringomyelia - syringomyelia which develops after a trauma such as a spinal cord injury

radiograph - another name for an X-ray; diagnostic machine which uses radiation to create an internal image of the body

syringomyelia - neurological condition where a fluid filled cyst forms in the spinal cord

syrinx - fluid filled cyst in the spinal cord

vertebra - segment of the spinal column

Syringomyelia A Century Ago

In the March, 2001 issue of the journal Spinal Cord, JR Silver published a historical review of post-traumatic syringomyelia. Silver identified five cases of PTS prior to 1920 and went on to describe each case with extensive quotes from the original sources. Three of the cases are highlighted here.

It is interesting to note that without MRI's, the syringomyelia in these cases was either diagnosed during an autopsy, or deduced from the history of symptoms.

While MRI's have enabled the definitive diagnosis of PTS, and several theories have formed regarding the mechanisms of PTS, it becomes all too clear in reviewing these cases that little progress has been made in treating PTS over the past 100 years.

Please note that the original source for the cases is cited below, but that the material for this feature is from the article written by JR Silver and published in Spinal Cord.

CASE 1: Gettysburg Soldier

Year: Published 1895, Case in 1864
Reported By: Dr. Mitchell and his son
Patient:

- 19 year old soldier wounded at Gettysburg by a bullet passing through his jaw and lodging in his throat
- Initially paralyzed in all 4 limbs
- Within 48 hours, feeling and strength had returned to his legs and left arm, but the right arm remained weak
- The bullet was removed and fragments from a vertebra came out of the wound (near C3) after which he improved rapidly
- 27 years later, he was unable to distinguish between hot and cold in his legs, suffered from pain in his back and shoulders, numbness below the waste, and loss of bladder control
- 2 years later, at the age of 49, he began to deteriorate and showed signs of progressive paralysis

Observations:

- Even though he experienced a near full recovery (and was re-enlisted), the soldier clearly had a spinal cord injury
- He later showed some of the classic symptoms of post-traumatic syringomyelia: sudden onset of paralysis, pain between the shoulder blades, loss of bladder control

Ed Note: *We now know today that PTS can develop months to years after a spinal cord injury. It is remarkable that this man returned to relatively good health after losing parts of his vertebra and still developed PTS.*

CASE 2: A Worker's Fall

Year: 1895
Reported By: Hermann Schlesinger
Patient:

- 55 year old male laborer
- Fell from the 4th floor and fractured his jaw, skull, and ribs
- Tender at T12 level with loss of sensation up to the thigh
- Loss of feeling progressed and three days after injury, he experienced pain in his back and abdomen
- He continued to get worse and died 76 days after his injury

Observations:

- Autopsy revealed a shift in the T12 vertebra which was compressing the spinal cord

- Three cysts (syrinxes) had formed and extended upward from the injury
- The spinal central canal was swollen
- Schlesinger identified this as syringomyelia

Ed Note: *With MRI, researchers are now studying where syrinxes form in relation to the initial injury and have noted that syrinxes tend to form above the level of injury and ascend from there. Unfortunately, this can result in further paralysis.*

CASE 3:

Year: 1915
Reported By: Victor Bellot
Patient:

- 24 year old male soldier shot in the left buttock
- Was able to walk to an outpost, but subsequently developed complete paralysis of his legs and bladder
- The bullet had entered his L3/L4 vertebra but he recovered bladder control and strength in his legs
- A year later he was able to walk without a stick, but still experienced some weakness in his legs
- Before returning to duty, he went on a holiday and went for many long walks
- When he returned to duty, he was unable to stand for any period of time
- 17 months after his initial injury, his condition deteriorated suddenly
- He experienced severe back pain, and loss of feeling and strength in his legs.
- A lumbar puncture showed no infection and a laminectomy was performed and the bullet removed
- The surgery was thought to be successful, but he died a short while later

Observations:

- Although the original report does not identify a syrinx, it does mention an ascending "myelitis" which is not further defined
- Silver believes this case clearly indicates onset of PTS, with a recovery from the initial injury followed by sudden onset of new symptoms

Ed Note: *Studies have shown that even people who have adapted well to spinal cord injuries often struggle with the rapid onset of new symptoms due to PTS.*