

Section of the Filum Terminale Surgery for Tethered Spinal Cord Syndrome in Patients with Chiari Malformation and Syringomyelia

DEFINITION:

Tethered spinal cord syndrome is a neurological disorder caused by tissue attachments that limit the movement of the spinal cord within the spinal column. These attachments cause an abnormal stretching of the spinal cord. The entity of an occult tight filum terminale syndrome, characterized by clinical findings consistent with a tethered cord syndrome, but with the conus ending in a normal position, has also been recognized recently. Spinal cord traction caused by a tight filum terminale may be considered a pathogenic mechanism involved in the development of syringomyelia, the Chiari malformation (type I) and scoliosis. Tethering may also develop after spinal cord injury and scar tissue can block the flow of fluids around the spinal cord. Fluid pressure may cause cysts to form in the spinal cord, a condition known as syringomyelia.

SIGNS & SYMPTOMS:

The course of the disorder is progressive. In children, the symptoms may include lesions, hairy patches, dimples, or fatty tumors on the lower back; foot and spinal deformities; weakness in the legs; low back pain; scoliosis; and incontinence. Tethered spinal cord syndrome may go undiagnosed until adulthood, when sensory and motor problems and loss of bowel and bladder control emerge. This delayed presentation of symptoms is related to the degree of strain placed on the spinal cord over time.

DIAGNOSTIC TESTS:

The symptoms and signs of a tethered cord are not always obvious and many patients may experience a delayed diagnosis. It is important to diagnose this condition as soon as possible because the neurological defect that results from abnormal stretching of the spinal cord may not be reversed by surgery. If a child has any combination of the above signs and symptoms, an MRI (magnetic resonance image) can be done. The exact incidence of tethered cord is unknown because it often goes undetected. Patients suspected of having tethered cord may go through the following steps for evaluation:

- Spinal x-rays
- MRI
- Somatosensory evoked potentials – to evaluate nerves and electrical impulse transmissions through the spinal cord
- Bladder function evaluation by a urologist

TREATMENT:

It is important that a neurosurgical assessment is made as early as possible after the onset of symptoms. The care of patients with tethered cord is very complex and is therefore best handled by neurosurgeons trained in treating tethered cord syndrome. If surgery is recommended to release the tension in the spinal cord, this is often a fairly simple and effective procedure. The main purpose of the surgery is to stop any further deterioration of neurological function by surgically releasing the spinal cord so it can hang freely within the spinal canal. If not treated, 90 percent will develop irreversible neurological problems. If repaired, there is less than 2 percent chance of leaving the patient with new deficits.

After section of the filum terminale, patients with syringomyelia showed an early clinical improvement of dysaesthesia, thermo-anaesthesia, hypo-aesthesia and walking difficulties. Rising of the medullary conus was also observed. In patients with scoliosis, back pain improved dramatically and a curve reduction was noticed, although progression of the curve was observed in one case. Section of the filum terminale is often helpful as part of the surgical treatment of scoliosis, syringomyelia and the Chiari malformation.

HOSPITAL STAY:

The usual length of stay is 3 to 4 days. Your child will need to lie flat for the first 24 hours after surgery to minimize the risk of CSF leakage. After that time, he/she can gradually sit up and resume former activity levels. The first 2 to 3 days will be spent in the Pediatric Intensive Care Unit (PICU) where your child will be closely monitored by specially trained nurses. You may stay with your child in the PICU or at the Ronald McDonald House one block away from the hospital.

PAIN CONTROL:

Our goal is to make your child comfortable. Pain medication can be given by mouth and through the intravenous line (IV). The nurses will be checking your child frequently to make sure he/she is comfortable. It is important for you to let the nurses know if you think your child may be hurting.

AFTER DISCHARGE:

Your child may gradually increase his/her activity as he/she feels like it. Frequent rest periods may be needed until he/she regains previous energy levels. You may get the incision wet although do not soak in the tub until after the stitches are removed. Be sure to call if he/she develops a fever over 100.8 degrees or has any redness or drainage at the incision site.