My Life is Dictated by my Bladder –

How do I regain control?

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When the bladder is working well, it is easy to take for granted. When there is difficulty, however, the effects can be life-altering. In about a third of cases, when a patient has difficulty with bladder function, neurological damage is the cause. However, in 70 percent of cases, no underlying nerve damage is detected.

In loss of bladder control, symptoms such as impaired urinary frequency, urgency, leakage, and the inability to empty the bladder are collectively called voiding dysfunction. Voiding dysfunction resulting from neurological damage (neurogenic bladder) might be caused by stroke, multiple sclerosis, or cancer.

When no nerve damage is detected, cases may be described as lower urinary tract symptoms (LUTS), overactive bladder (OAB), spastic bladder, chronic pelvic pain, or other painful syndromes, including interstitial cystitis.

Two Nervous System Components Guide Bladder Control

The bladder responds to reflexes for retention and voiding of urine – called guarding and facilitatory reflexes – that involve voluntary aspects of control exerted through the central nervous system, and signals from the peripheral nervous system.

Pelvic Neuromodulation Spurred Development of Sacral Nerve Stimulation

Since the 1960s, electrical stimulation has been developed for use in patients experiencing bladder issues. Originally, to help patients paralyzed by spinal cord injuries pass urine, electric stimulation was applied directly to the bladder. In the mid-1970s, electrical stimulation was extended to patients with voiding dysfunction. At the same time, cardiac pacemaker technology was being refined, advancing implant technology.

The burden and torment of bladder voiding dysfunction has been relieved for more than 20,000 patients through sacral nerve stimulation

In 1997 the FDA approved Medtronic's Interstim device, which is designed to control bladder-voiding dysfunction by stimulating sacral nerves that extend into the pelvic area from the base of the tailbone.

Today, more than 20,000 patients worldwide have been treated with sacral nerve stimulation (SNS) as a treatment for severe bladder voiding dysfunction that is not associated with neurological damage.

Most current candidates for SNS seek to treat loss of bladder control due to experiencing leakage, or inability to empty the bladder.

A growing group seeks relief from chronic bladder pain, caused by syndromes such as interstitial cystitis, which does not respond to more conservative measures.

A Patient's Experience with Sacral Nerve Stimulation for Bladder Dysfunction

As an example of the therapy, the following account describes the experience of a patient referred to as JM. She was 42 years old at the time of her first visit to the urology clinic where she received SNS. JM was referred by a colleague after exhausting all types of conventional treatments and medications during seven years of suffering from bladder pain, urinary urgency and frequency. It began at age 35, after a simple urinary tract infection. Her urge to void every 30 to 45 minutes disrupted her daily activities and sleep, and often forced her to search frantically for suitable bathrooms nearby.

In desperation, JM sought help everywhere she could. She received oral medications (anticholinergics) despite their unpleasant side effects. She had injections inside her bladder and, in extreme desperation, had her uterus removed, thinking it might be the source of pain, pressing on her bladder. Unfortunately, all those therapies failed to achieve any sustained bladder control or pain relief.

In 1998, she first visited the urologist for a consultation. After simple tests ruled out urinary tract infection, he asked her to keep a daily log of the amount and frequency of her urination for 3 - 5 days. In addition to starting this "baseline" diary, she took a screening test to find out if she was a candidate for sacral nerve stimulation.

The test was conducted under local anesthesia as an outpatient procedure, and involved stimulating nerves near the lower part of the tail bone with a low electric current, transmitted along a fine needle. JM was asked to report any sensation in the areas of the genitalia and rectum. Once the location was identified, the doctor threaded a temporary electrode wire through the needle. He then removed the needle, taped the external part of the wire to JM's back, and connected the end of the wire to the external battery operated pulse generator.

Sacral Nerve Stimulation Test Brings Relief

After this implant, JM kept another voiding diary for 3 - 5 days. The following week she came to the clinic smiling. The pain she was accustomed to enduring for so long had been relieved, leaving her comfortable and content.

Success Encourages Patient to Try Permanent Implant

The comparison of the pre- and post- implant diaries showed the test was a success, with greater than 50% improvement in the number of times she urinated per day and an increase in the volume of urine in each void. JM had an X-ray film to document the location of the temporary wire. The physician removed the temporary test wire. As expected, while JM waited to have her permanent implant, without the temporary intervention, her original symptoms returned in less than a week.

JM went on to have a permanent stimulator implanted a few weeks later. This was a minimally invasive procedure, which was conducted under general anesthesia using a real time movie X-ray to ensure that the permanent electrode lead was placed exactly where it needed to be. Her physician implanted the pulse generator under the skin in the upper buttock where it would not cause discomfort, and connected it to the electrode lead.

In a check-up six months later, the doctor was pleased to hear that she enjoyed herself at the movies with her husband two weeks after her surgery. She told the story of how she had left the cinema in tears, although the film was a comedy.

She reassured her husband that she was overwhelmed with joy since it was her first time in 10 years that she was able to sit through an entire movie without having to use the bathroom. JM carried on with her life, grateful for the relief and freedom that sacral nerve stimulation had provided her.

Sacral Nerve Stimulation Can Increase Bladder Control, Decrease Pain

Very little is known about the mechanism of action of SNS despite numerous scientific investigations.

The majority of clinicians studying and practicing this therapy believe that the beneficial effect is brought about by modulating the reflexes involved in bladder function (i.e. guarding and facilitatory reflexes).

A major objective of the therapy is to ensure the patient's sensation of a pulsating current in the perineal region (the area that extends from the external genitalia to the rectum).

Losing this sensation or shifting its location means the electrode has moved and is in the wrong place, which reduces the efficacy of the therapy. If this occurs, the electrode should be re-positioned. Once the electrode is properly and permanently implanted, the patient has the capability of controlling the stimulation parameters through a remote control device in order to ensure a persistent sensation.

With the patient's input, the clinician can adjust the parameters of stimulation according to the patient's needs. The therapy is geared to the life span of the internal battery of the pulse generator implanted under the skin – which averages 5 - 7 years, depending on the usage. Once the battery stops functioning, the implant is surgically removed and replaced with a new one. If a patient ever wishes to cease the therapy, both electrode and battery can be surgically removed.

Please note: *This information should not be used as a substitute for medical treatment and advice. Always consult a medical professional about any health-related questions or concerns.*

Further reading

1. Chancellor, M.B. Chartier-Kastler, E. (2000). "Principles of sacral nerve stimulation (SNS) for the treatment of bladder and urethral sphincter dysfunctions.". *Neuromodulation* 3: 15–26.

2. Hassouna, M.M. Siegel, S.W., Nyebolt, A.A., et al. (2000). "Sacral neuromodulation in the treatment of urgency-frequency symptoms: A multicenter study on efficacy and safety". *J Urol* 163: 1849–1854.

Resources

Cystitis and Overactive Bladder Foundation
http://www.cobfoundation.org/