

# Spinal Cord Stimulation (Burst Vs Tonic), For Axial And Neuropathic Pain

**Enrique Osorio-Fonseca MD**

*Neurosurgeon, Associated Proffesor El Bosque University, Bogotá Colombia*

## **Introduccion:**

Spinal cord stimulation (SCS) has been recognized as one of the effective treatments of medically intractable chronic pain. The most commonly used stimulation has been Tonic stimulation. However, current solutions may not fully address patients' preoccupation with pain or other associated psychological factors with increasing awareness and quantification, studies now show 20-30% of patients are non-responders, with some studies showing even higher rates of failed trials. And the Pain control in patients with nociceptive pain remains ineffective.

Tonic SCS (above perception threshold) relies on the presence of paresthesia in treated limbs to:

- o Deliver pain reduction using Gate theory
- o Validate appropriate lead positioning, but un important number of patients do not tolerate paresthesia, or prefer not to feel sensation at all.

It is believed that pain stimuli are processed in parallel by two pathways: a lateral discriminatory pathway: helps identify the location, type and intensity of pain , and a medial affective/attentional pain pathway, helps drive attention and salince to the pain. The lateral pathway fires in tonic mode. In contrast, the medial pathway is triggered by nociceptive-specific neurons, firing in burst mode.

## **Material And Methods:**

Epidural electrodes for different types of pain (neuropathic and / or axial) were placed on 16 patients and During the first month, Tonic stimulation was given during the 1st and 3rd weeks and Burst stimulation during the 2nd and 4th weeks, without the patients knowing what type of stimulation was active.

These patients were followed and evaluated for 16 months.

## **Results:**

Significant improvement in pain measured on the VAS scale was observed in all the patients, with Burst stimulation compared with the tonic: Preoperative AVA: 9/10. With Tonic Stimulation: 5/10. With Burst stimulation: 2/10.

All patients prefer Burst stimulation. 33% of patients with Burst stimulation presented paresthesias, whereas with Tonic stimulation 100%. In addition, Burst-stimulated patients reported less annoying paresthesias comparatively.