

Utilization of Proprietary Paresthesia Free Spinal Cord Stimulation for Post-Mastectomy Pain Syndrome

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INTRO

- Approximately 1.7 million new cases of breast cancer are diagnosed every year in women worldwide. Of these, an estimated 25 to 50 percent of women who undergo breast cancer related surgery will suffer from post-mastectomy pain syndrome (PMPS).
- The pathophysiology of this pain syndrome appears to be due to unresolved inflammation, sensitization of peripheral nociceptive fibers, neuroma formation, and/or sensitization of neurons within the central nervous system.
- While scientific literature concerning PMPS has been available for more than 40 years, the standard of care for the treatment of PMPS has yet to be established.
- We describe a case in which a patient with intractable neuropathic cancer-related pain achieved symptom relief and improved quality of life with proprietary paresthesia free, targeted spinal cord stimulation (SCS).

DISCUSSION

- In short, increased firing of WDR neurons due to excitatory components of the neural pathways regulating pain signals results in increased signaling to the brain. Targeting of surrounding inhibitory neurons helps to mitigate this process.
- Historically, sub-paresthesia spinal cord stimulation had a long “wash-in” period and thus made programming and identifying appropriate capture and dosing for stimulation difficult. A typical programming “session” could take days for the patient to begin feeling the relief from the sub-paresthesia stimulation.
- In this patient, paresthesia-based programming and mapping in the office were utilized which, once appropriate capture is achieved, is then modified to below the patient’s paresthesia threshold. This results in patients achieving pain relief within minutes of programming.
- To our knowledge, this is the first reported case of this novel SCS technology being utilized for the treatment of PMPS.

This proprietary form of spinal cord stimulation was successful in reducing pain and improving quality of life in this patient with post mastectomy pain syndrome.



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Small sensory Aδ and C-fibers (1) send **pain signals** to the Wide Dynamic Range (WDR) neurons (2).

More WDR neuron firing (3) results in more pain.

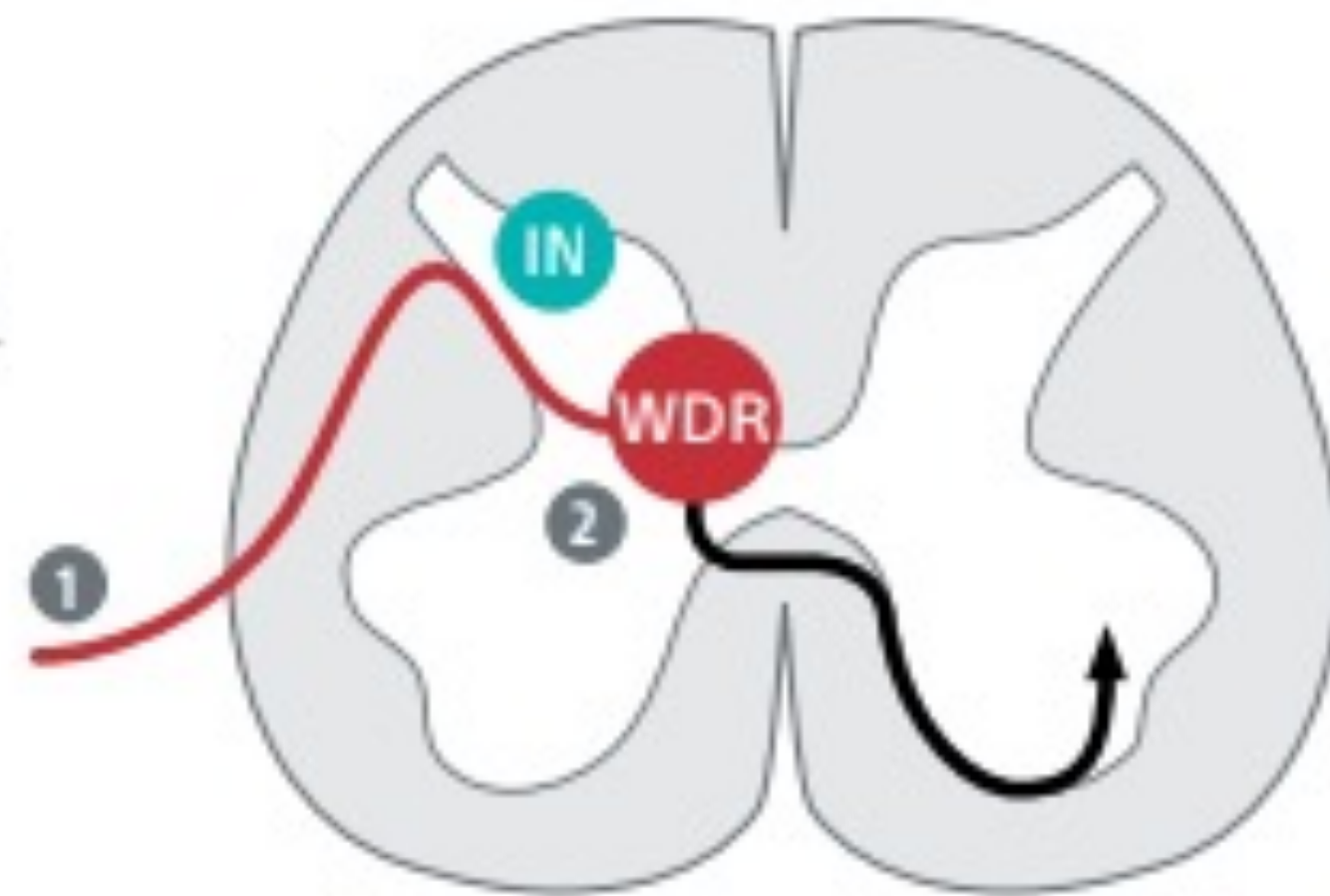


Figure 1

TRADITIONAL SCS

Traditional paresthesia SCS engages both Aβ-Center (4) and Aβ-Surround (5) neurons in a non-optimal way, resulting in: **Some Inhibition** but also **More Excitation** of the WDR, and therefore suboptimal pain relief.

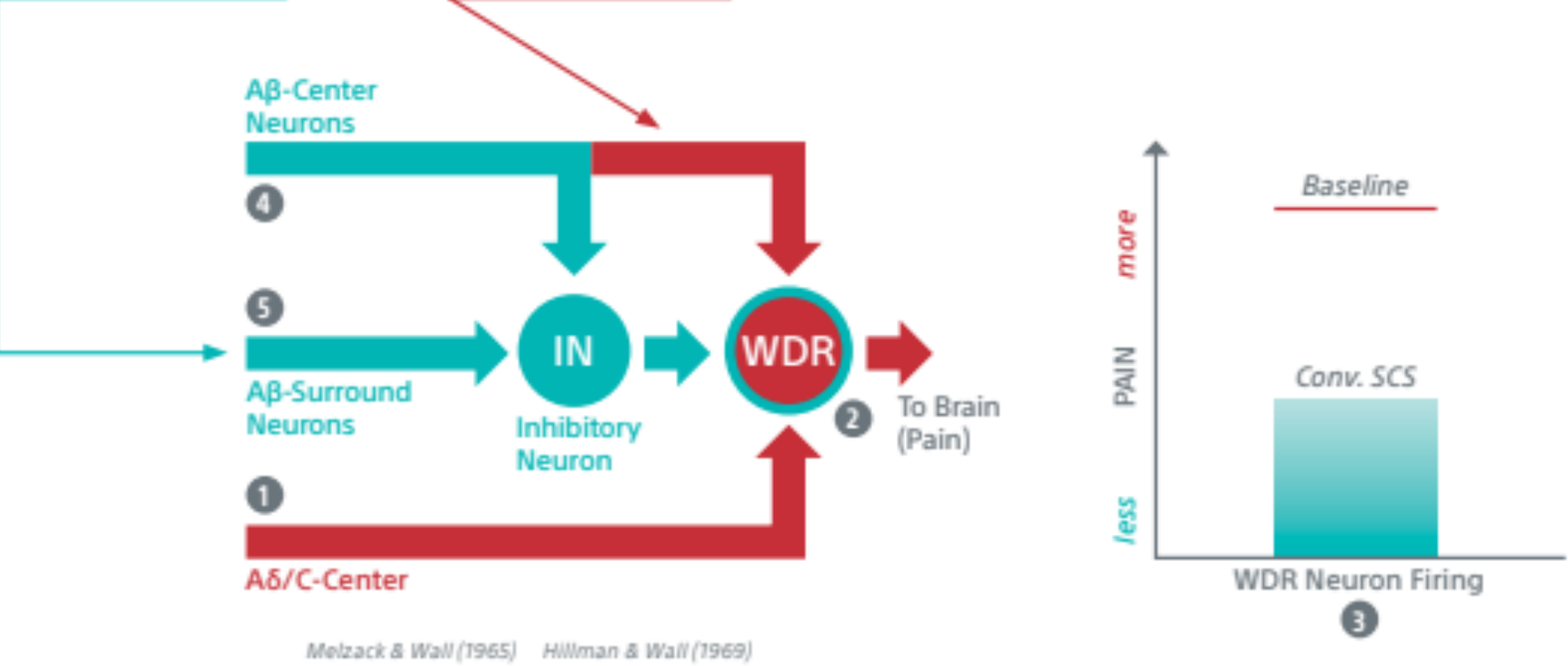


Figure 2

PRECISE TARGETING + PROPER DOSE

preferentially engages Aβ-Surround neurons (6) with precise targeting while minimizing activation of Aβ-Center neurons (7) with proper neural dosing, resulting in: **More Inhibition** and **Less Excitation** of the WDR, and therefore less pain (8).

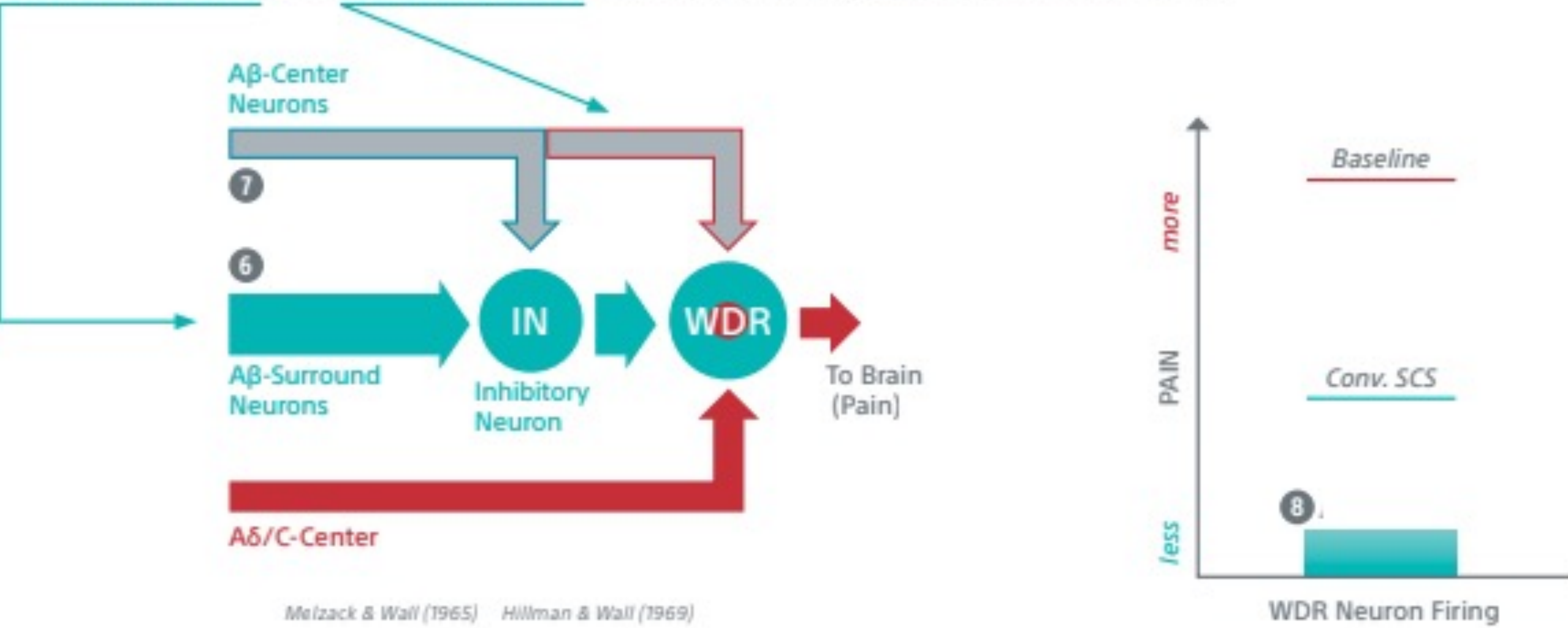


Figure 3