

Subclavicular and Suprascapular Placement of Response Neurostimulator Generator: Two Unique Cases

Christopher Park, MS-3¹, Michael Kinsman, M.D.¹, Bailey Yekzaman, M.D.¹, Vishal Shah, M.D.², Patrick Landazuri, M.D.², Heather Minchew, M.D.¹, Ahmad Masri, M.D.¹

¹The University of Kansas School of Medicine-Kansas City, Kansas-City, Kansas, Department of Neurological Surgery

²The University of Kansas School of Medicine-Kansas City, Kansas-City, Kansas, Department of Neurology

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Introduction. The Response Neurostimulation (RNS) system is a treatment modality for medical refractory epilepsy that monitors and responds to electrical signals that may indicate the onset of seizure activity. The RNS system consists of the depth electrode and/or cortical strip electrode in the seizure focus connected to a neurostimulator. The neurostimulator is placed within the skull to minimize system noise. However, there are cases in which placing the neurostimulator in the skull may not be ideal due to obstruction of future treatment/imaging or wound healing issues with the scalp.

Methods. Two patients underwent trials for neurostimulator placement at different sites. The first patient required further treatment for a high-grade glioma, and the initial placement interfered with both radiation treatment and imaging quality. As a result, the generator was repositioned to the subclavicular area. The second patient experienced wound healing issues due to a thin scalp, which led to erosion and eventual device explantation. After discussion, the neurostimulator was successfully placed in the suprascapular/trapezius region.

Results. Neurostimulator placement in non-traditional locations such as the subclavicular and suprascapular/trapezius positions provided electrocorticography with great signal and minimal noise contrary to previous assumptions.

Conclusions. These encouraging findings highlight the potential for neurostimulators to be placed in unconventional locations for patients who benefit from the RNS system but face complications with cranial placement. In these two cases, the generators were ultimately placed in the subclavicular and suprascapular/trapezius regions, respectively. Both patients maintained excellent electrocorticography and continued to benefit from the RNS system.

Conflicts: Dr. Kinsman consulted for Neuropace in 2023.