



# Dorsal Root Ganglion Stimulation for the Treatment of Hip Pain

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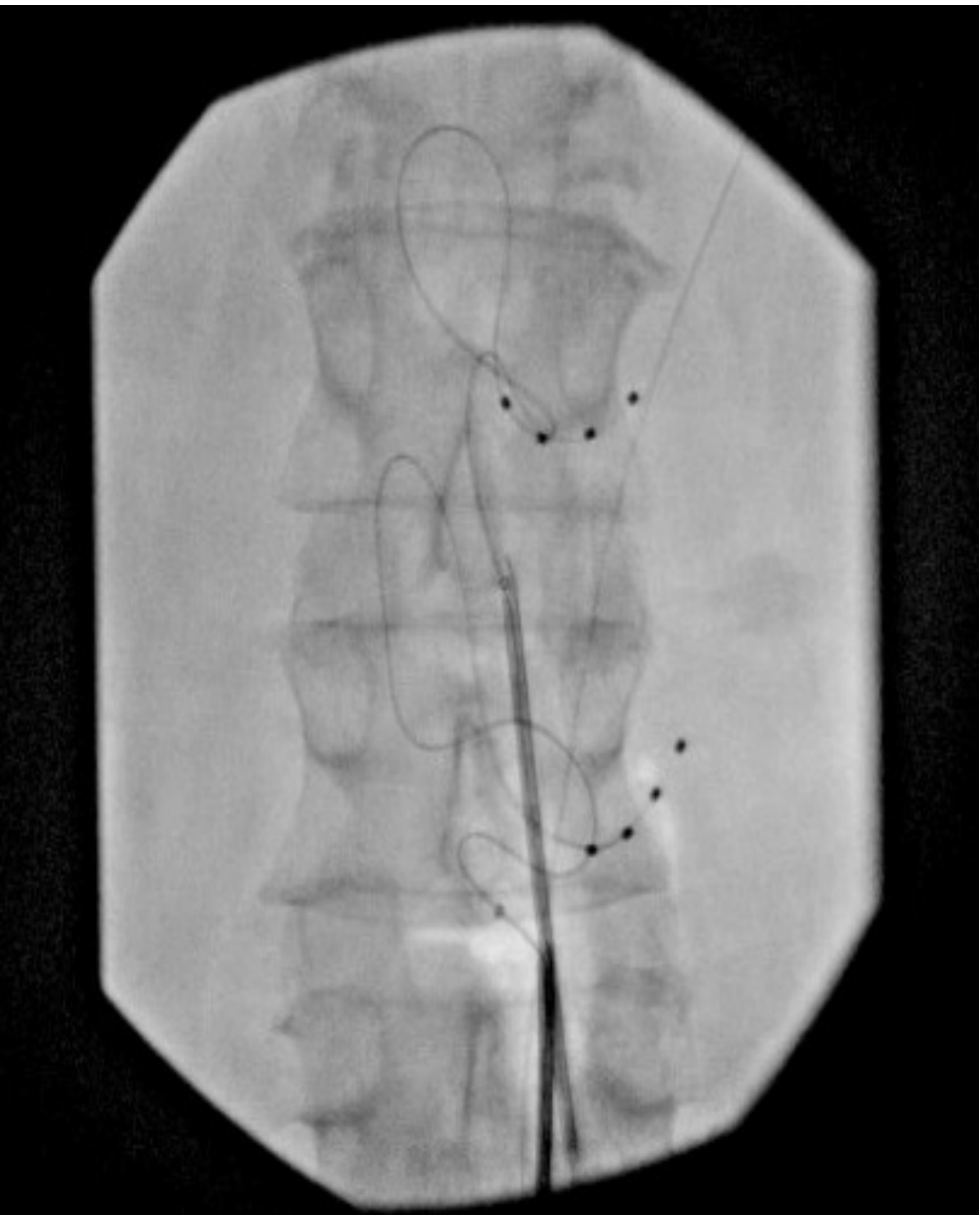
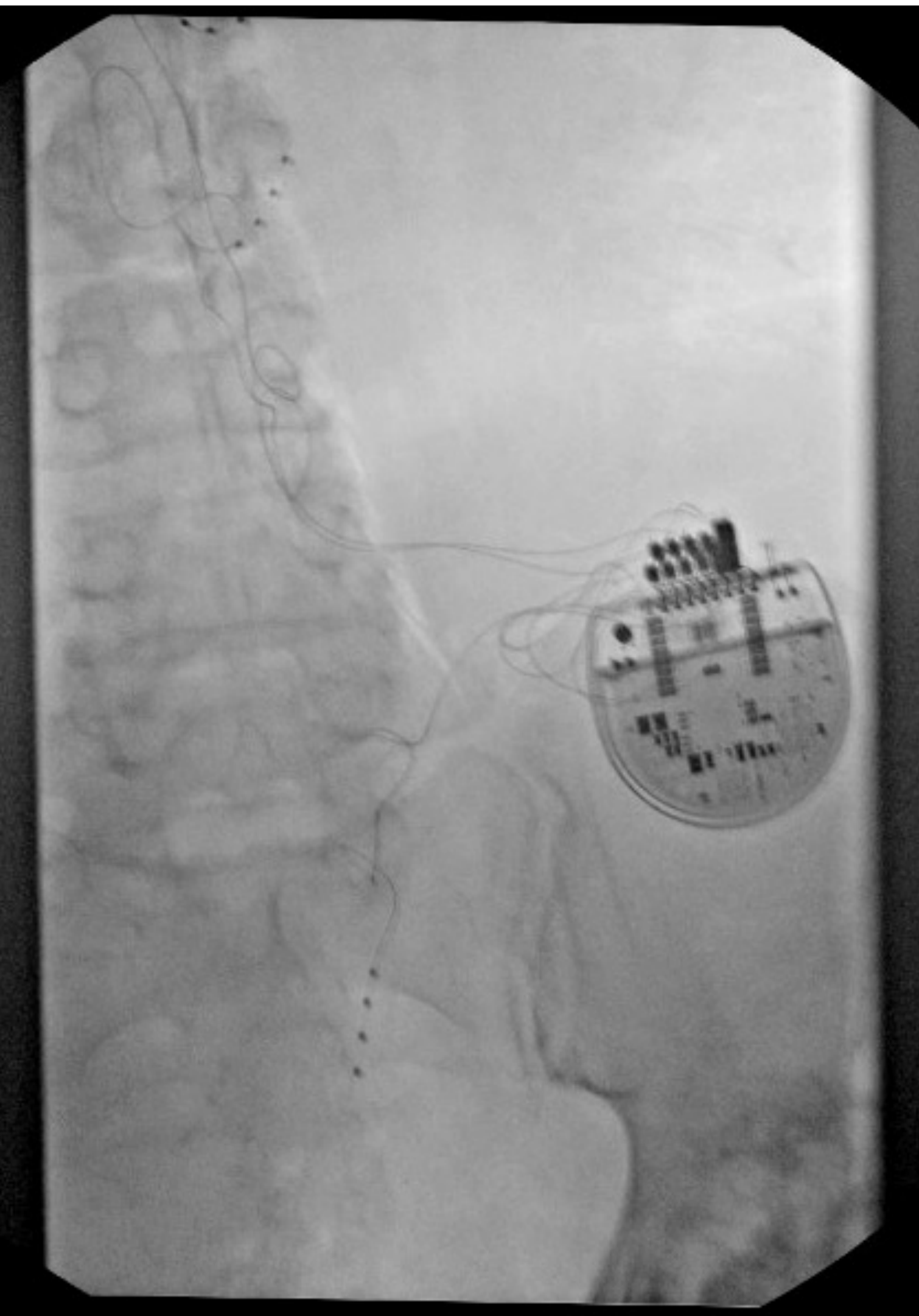
## Case Presentation

A 70-year-old obese female presented to pain management clinic for right hip pain. She noted 1 year of pain, with X-Ray demonstrating osteoarthritis with an age-indeterminate fracture of the right superolateral femoral head. She was seen in orthopedic clinic with recommendation for a total hip arthroplasty, however, declined over post-operative rehab concerns. She failed treatment with NSAIDs, opioids, physical therapy, and aquatic therapy, and was referred to pain management. She received two fluoroscopic guided intraarticular hip injections with dexamethasone two months apart, neither of which provided significant sustained relief. After undergoing Dorsal Root Ganglion Stimulator (DRG-S) trial with 80% pain relief, she returned to the OR one month later for DRG-S implant, with L1, L2, and S1 leads tunneled to a right buttock pocket containing the device.

Two months post-implant, the patient notes 100% resolution of her pain while at rest either seated or laying down, however, notes only 30% pain improvement when ambulating compared to pre-procedure baseline. While she continues to report some pain, she has tolerated restarting physical therapy, with improvements in mobility and function and improved sleep with decreased pain medication requirements.

## References

1. Chapman KB, Tupper C, Vissers KC, van Helmond N, Yousef T. Dorsal root ganglion stimulation for the treatment of joint pain with predominantly nociceptive characteristics: A case series. Pain Pract. 2023 Mar;23(3):317-324. doi: 10.1111/papr.13180. Epub 2022 Dec 8. PMID: 36334041.
2. Victor S, Burnett C, Lange R, Pohler K. Dorsal root ganglion stimulator for avascular necrosis of the hip. Proc (Bayl Univ Med Cent). 2018 Sep 26;31(4):532-533. doi: 10.1080/08998280.2018.1483149. PMID: 30949004; PMCID: PMC6413972.



Top: Fluoroscopy imaging of DRG lead positioning  
Bottom: Most recent hip X-Ray demonstrating worsened destructive arthropathy



## Discussion

DRG-S is an emerging neuromodulatory therapeutic that has demonstrated success in the treatment of complex regional pain syndrome (CRPS) and causalgia. DRG-S has shown additional promise in the treatment of pain syndromes that are not purely neuropathic, including axial low back pain and nociceptive/mechanical pain, although its exact effectiveness for these conditions is not yet fully known. A retrospective analysis of five patients who underwent DRG-S for treatment of intractable joint pain (hip, knee, or ankle), without strong evidence for neuropathic pain or CRPS, demonstrated 74% mean NRS pain score improvement and 65% mean ODI improvement. The physiological reason for this observation is believed to be due to DRG-S’ ability to directly influence the conduction of nociceptive signaling at the DRG and within the spinal cord.

## Conclusion

DRG-S mapped to the L1, L2, and S1 dermatomes has thus far provided significant hip pain relief at rest in our patient, however has not completely resolved her pain upon weight bearing or ambulation. It should be noted that unlike hip replacement, which remains the standard of care for patients with severe hip osteoarthritis, DRG-S will not help prevent further joint degeneration or mechanical shear. This was fully explained to the patient, who remained unwilling to undergo total hip replacement due to concerns regarding intensive rehabilitation. Despite this continued mechanical hip pain upon ambulation, it is imperative for the patient to continue mobilization to prevent complications of inactivity such as deconditioning, DVT/PE, and pressure sores. Future treatment plan includes continued collaboration with the device company regarding optimal stimulator programming, and if needed, revisitation of orthopedic consultation for total hip arthroplasty. While this case demonstrates some success of DRG-S in the treatment of hip pain, especially at rest, there remains a need for larger studies regarding the utility of DRG-S for the treatment of joint pain.