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MAGNETIC RESONANCE NEUROGRAPHY FOR RESIDUAL PELVIC PAIN AFTER SYNTHETIC VAGINAL MESH AND/OR SLING REMOVAL

Hypothesis / aims of study
To evaluate the role of magnetic resonance neurography (MRN) in the management of pelvic pain after synthetic vaginal mesh kit for prolapse and/or suburethral sling removal.

Study design, materials and methods
Following IRB approval, a neutral reviewer collected demographics and outcome data in an electronic medical record (EPIC) for consecutive women with pelvic pain following mesh for prolapse and/or suburethral sling removal that were referred to a Physical Medicine and Rehabilitation (PM&R) pelvic pain specialist and underwent MRN as part of their evaluation. Excluded were women lost to follow-up after initial PM&R consultation. MRN was performed to assess relevant nerve-related diagnoses, specifically pudendal, sciatic, and genitofemoral neuropathies. All studies were performed on 3 Tesla MR scanners employing a combination of 2D (dimensional) and 3D nerve selective techniques including diffusion tensor imaging. All studies were reviewed by the same radiologist (AC) unaware of patient clinical condition to avoid interpretation bias.

Primary outcome was pelvic pain score assessed by a Numeric Pain Rating Scale (NPRS) that was collected at every physiatrist and physical therapist visit. Success was defined as a 50% or greater reduction in pain score comparing initial visit and visit after most recent therapy.

Results
From 2013 to 2015, 19 women were studied (Table 1), with MRN-confirmed neuropathies in 11 and 8 studies interpreted as normal. MRN found isolated pudendal (n=5) and sciatic (n=1) neuropathy, both pudendal and sciatic neuropathy (n=4), and both pudendal and genitofemoral neuropathy (n=1). As a result, 8 of 11 (73%) MRN positive patients received injections as part of their therapy, while only 2 of 8 (25%) MRN negative patients did. Regarding pain scores, the negative MRN group experienced an average 8.5% improvement, while those with MRN-confirmed neuropathies experienced an average 16.5% improvement. As for success (≥50% pain reduction), 3 (27%) MRN positive patients achieved success, while 1 (13%) MRN negative patient did at the completion of their pelvic pain therapies.

Interpretation of results
To our knowledge, this is the first study examining the use of MRN in the care of women following vaginal mesh kit for prolapse and/or sling removal. Pudendal, sciatic, and genitofemoral neuropathies may be sources of lingering pain in women who have had prior synthetic mesh and/or sling removed vaginally. MRN proved useful in confirming neuropathies in over half of patients tested, therefore impacting their care. Directed therapies included nerve blocks, radiofrequency ablation or pulsed radiofrequency, neuropathic pain medications, or targeted physical therapy.

Concluding message
In women with refractory pelvic pain after vaginal mesh/sling removal, MRN could serve as a predictor for a better outcome with pelvic pain-directed therapies in those with MRN confirmed neuropathies.

Table 1. Association between clinical parameters and MRN neuropathy findings

	MRN-Confirmed Neuropathy (n = 11)	No Relevant MRN Finding (n = 8)
Average (Range)		
Age	54 (33-66)	46 (32-68)
BMI	27.5 (21.4-37.1)	26.4 (17.8-34.0)
Months from Mesh Removal to Evaluation for Pain	13.5 (1-57)	8.1 (4-17)
Months from Implantation to Last Mesh Removal	47.2 (5-90)	37.5 (14-71)
# of Removal Surgeries	2.3 (1-8)	2.0 (1-4)
# of Abdominopelvic Surgeries	6.4 (3-12)	5.8 (3-11)
Initial Pain Score	5.7 (1-8)	5.3 (3-10)
Final Pain Score	4.5 (1-9)	4.7 (2-10)
Percent Change	16.5% (-60%-85%)	8.5% (-33%-60%)

Figure 1. MRN images demonstrating normal nerve tracts

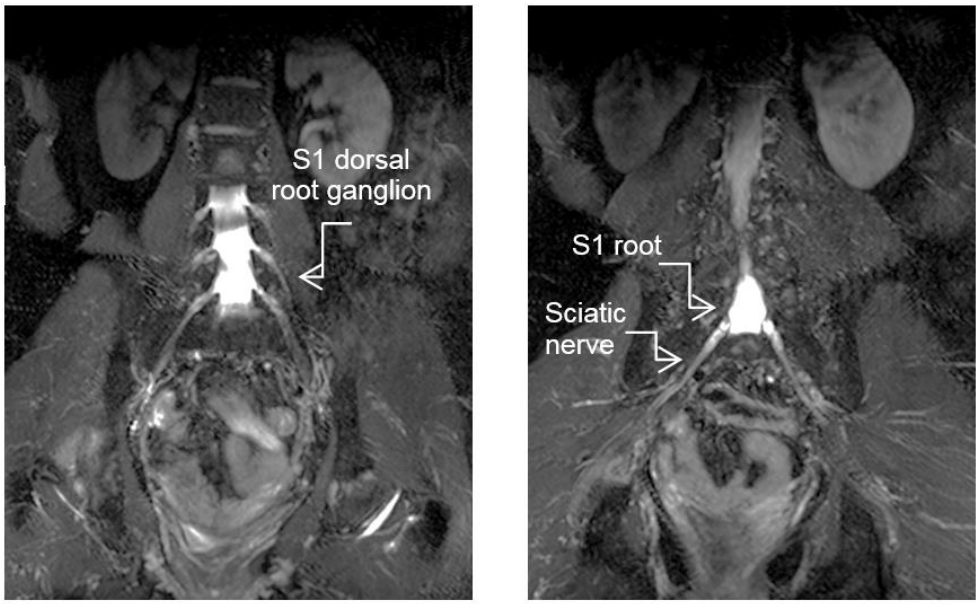
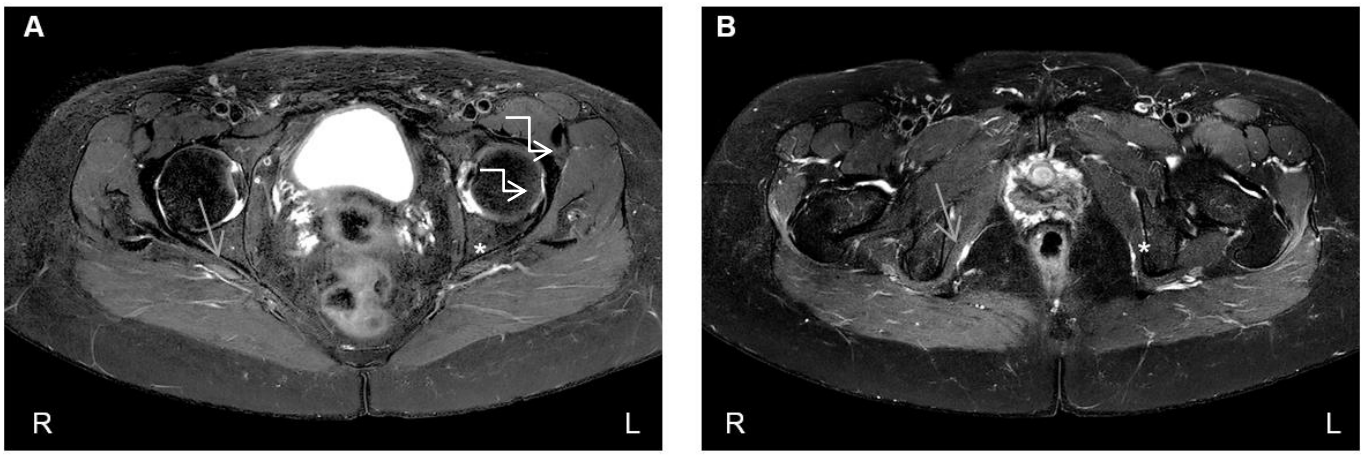


Figure 2. T2 fat saturation MRN images demonstrating right-sided (A) sciatic and (B) pudendal neuropathy findings (arrow)



Disclosures
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