

Catheter Tip Granuloma As A Unique Cause of Myelopathy

Kellen Hilton, M.D. and Nalini Sehgal, M.D.
University of Wisconsin Health, Physical Medicine & Rehabilitation



Introduction

Intrathecal pumps for chronic pain safe and effective when appropriately implemented and can reduce overall opioid doses in patients with intractable chronic pain.¹

Catheter tip granuloma is a rare but serious complication in patients being treated with intrathecal pain pumps.²

The mechanism of granuloma formation is not fully understood but has been shown to be related to the specific drug and concentration with high doses of morphine and hydromorphone being more common.^{3,4}

Several reports of granuloma formation note morphine doses >10 mg/day and concentration 25mg/ml.⁵

Case

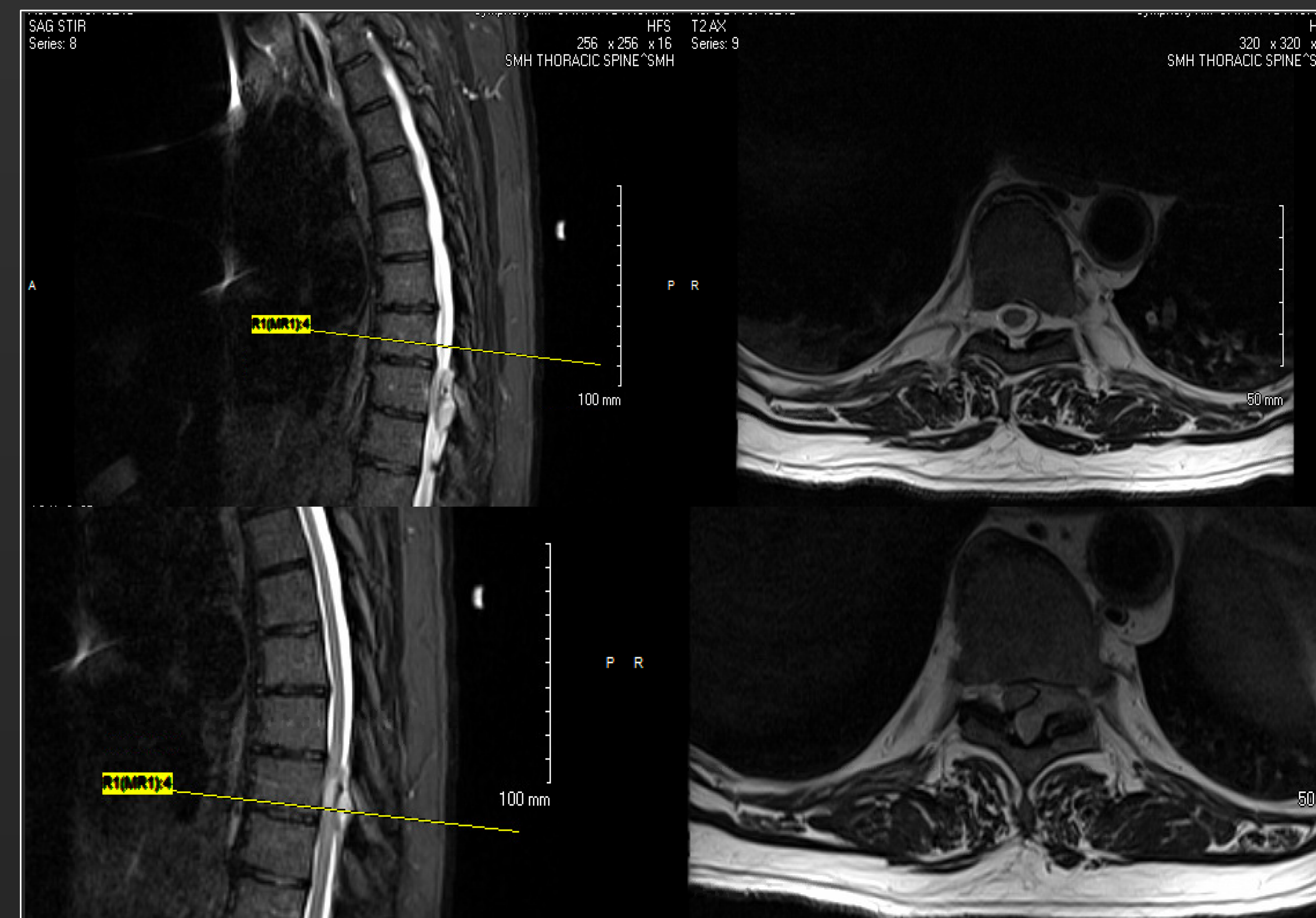
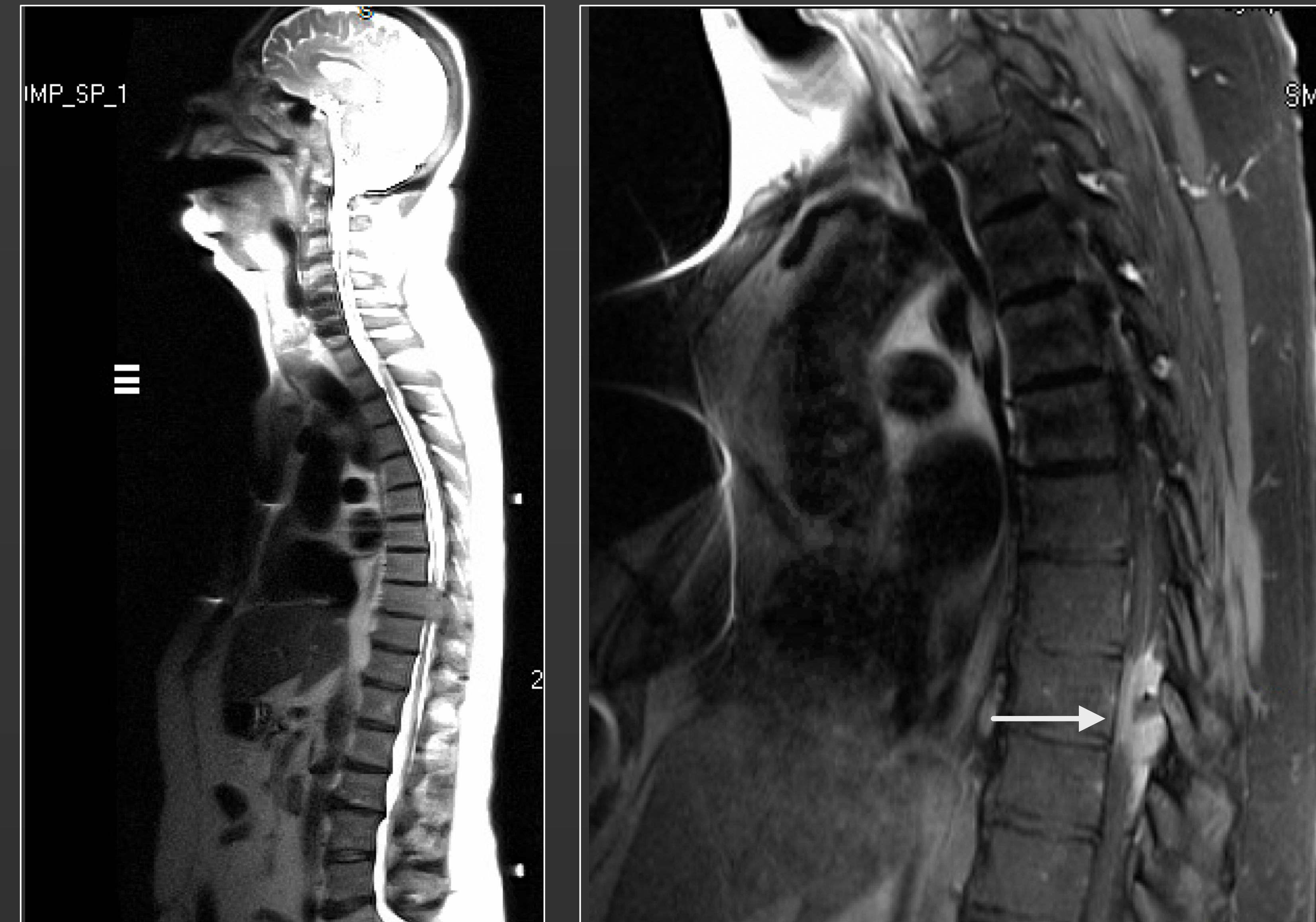
A 55-year-old male with history of intractable lower extremity pain following L5-S1 laminotomy and fusion.

He underwent Codman 3000 constant flow intrathecal pump placement with 5 years improved pain relief with morphine dose of 1200-1750 mcg/ml infused at 0.5ml/day

Patient was also noted to have neck pain with mild cervical stenosis and left C3-C4 and bilateral C4-C7 cervical foraminal stenosis over this time course.

He subsequently developed progressive numbness in his lower legs with eventual circumferential numbness below the umbilicus with increased spasticity.

Thoracic spine MRI revealed left-sided extradural mass centered at the T9 vertebral level at the level of catheter tip with resulting cord compression. The patient underwent T8-T11 laminectomy for tumor decompression and removal of pain pump catheter tip.



Outcome

The patient had improvement in spasticity and gait, with persistent strength deficits in his lower extremities following surgery.

He underwent intrathecal pump replacement and continues to get subsequent pain relief from ongoing intrathecal morphine therapy.

Conclusion

Catheter tip granuloma is very rare in patients receiving low dose intrathecal morphine.

Granuloma formation should be considered as a cause for myelopathy in all patients receiving intrathecal treatments with any increase in pain or change in symptoms

It is safe and feasible to continue intrathecal therapies after granuloma resection and catheter replacement.⁶

References

1. Knight KH, Brand FM, Mchaourab AS, Veneziano G. Implantable intrathecal pumps for chronic pain: Highlights and updates. *Croat Med J.* 2007;48(1):22-34.
2. Coffey RJ, Burchell K, Inflammatory mass lesions associated with intrathecal drug infusion catheters: Report and 5) observations on 41 patients. *Neurosurgery* 2002; 50:78-87.
3. Allen JW, Horais KA, Tozier NA, Yaksh TL. Opiate pharmacology of intrathecal granulomas. *Anesthesiology.* 2006;105(3):590-598. doi:10.1097/0000542-200609000-00025
4. Ramsey CN, Owen RD, Witt WO, Grider JS. Intrathecal granuloma in a patient receiving high dose hydromorphone. *Pain Physician.* 2008;11(3):369-373.
5. Duarte RV, Raphael JH, Southall JL, Baker C, Ashford RL. Intrathecal granuloma formation as result of opioid delivery: systematic literature review of case reports and analysis against a control group. *Clin Neurol Neurosurg.* 2012 Jul;114(6):577-84. doi: 10.1016/j.clineuro.2011.12.007. Epub 2011 Dec 26. PMID: 22204777.
6. Haering M, Saleh C, Jaszczuk P, Koehler M, Hund-Georgiadis M. Intrathecal pump catheter-tip granuloma recurrence with associated myelomalacia – How safe is intrathecal analgesic infusion therapy? A case report. *Surg Neurol Int.* 2019;10(62):1-4. doi:10.25259/SNI-33-2019