

Clinical relevance of incidental positive microbiological findings during routine refilling of intrathecal drug delivery pumps: a retrospective cohort study [Abstract]

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Results: Of 358 patients treated between 1999 and 2024, 22 met the inclusion criteria (11 males and 11 females). The mean age at VNS insertion was 28.9 ± 10.3 years and the mean length of follow-up was 10.2 ± 6.8 years. 73% of patients achieved Engel 3 or better, 82% had McHugh 3A or better and no patients achieved seizure freedom. 82% reported satisfaction with VNS treatment. One patient had the device removed or battery permanently switched off. Common side effects included cough ($n = 9$, 41%), voice changes ($n = 5$, 23%) and throat discomfort ($n = 1$, 5%).

Conclusions: VNS therapy was associated with durable seizure reduction over long-term follow-up and high overall satisfaction in this cohort. Further research is needed to identify predictors of response and to understand subjective quality-of-life outcome measures.

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Clinical relevance of incidental positive microbiological findings during routine refilling of intrathecal drug delivery pumps: a retrospective cohort study

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Intrathecal drug delivery systems (IDDS) are an established therapy for spasticity and chronic pain¹. IDDS-related infections are rare but potentially serious. Limited data exists on the frequency and clinical relevance of asymptomatic microbiological findings². This study aims to evaluate microbiological findings from residual pump fluid obtained during routine outpatient refills and their clinical relevance.

Methods: In this retrospective single-centre cohort study, we review electronic charts of all patients undergoing routine IDDS refills, where residual pump fluid is sent for microbiological analysis as a standard practice. Patient and IDDS characteristics, microbiological results, and clinical outcomes were analysed.

Results: 1008 microbiological findings from 58 patients (53.6% female) were analyzed. 12 positive findings were identified in 10 patients (1.2% of samples). Patients with ≥ 1 positive finding underwent significantly more refills per patient compared to those with negative results ($p = 0.03$). IDDS explantation due to infection was required in 6 patients (10.3%), 5 of which occurred shortly after scheduled battery replacement due to depletion. Only 1 had prior positive findings, showing no significance or predictive value (OR 0.96, $p = 1.00$, PPV 10%, NPV 89.6%). Explantations occurred predominantly in patients with 20ml reservoirs ($p = 0.06$), while positive findings were equally distributed between 20ml and ≥ 40 ml reservoirs. Patients with positive findings had lower infusion rates than those without (0.53 vs. 0.015mg/24h, $p < 0.05$). Similarly, patients requiring explantation showed also lower infusion rates (0.9 vs. 0.014mg/24h). Cardiovascular or metabolic comorbidities were not associated with infection or positive findings.

Conclusions: Incidental positive microbiological findings from residual pump fluid in asymptomatic patients showed no clinical prognostic relevance. The results suggest contamination during sampling and argue against therapeutic intervention in the absence of clinical symptoms, as infections occurred independently of prior positive findings. Routine microbiological testing during pump refills should therefore be critically reconsidered in the absence of clinical signs of infection.

Optional Image

Table 1. Cohort Characteristics and Microbiological Findings

Variable	Value
Number of patients	58
Total microbiological samples	1008
Mean samples per patient	17.4
Patients with ≥ 1 positive routine culture	10 (17.2%)
Total positive routine samples	12 (1.19%)
Patients with explantation due to infection	6 (10.3%)
Mean follow-up duration	76.9 months
Follow-up range	0–228 months
20 mL reservoir	29 patients
≥ 40 mL reservoir	26 patients
Unknown reservoir size	3 patients
Explantations in 20 mL pumps	6 (100%)
Explantations in ≥ 40 mL pumps	0
Staphylococcus epidermidis	9 samples (75%)
Staphylococcus haemolyticus	1
Staphylococcus warneri	1
Micrococcus species	1
Citrobacter species	1
Gram-positive isolates	11/12 (91.7%)
Gram-negative isolates	1/12 (8.3%)

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Revision Dorsal Root Entry Zone Lesioning for Intractable Deafferentation Pain After Brachial Plexus Avulsion

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Neuropathic pain following brachial plexus avulsion (BPA) represents one of the most refractory pain syndromes in neurosurgical practice. Dorsal root entry zone (DREZ) lesioning provides effective relief in most cases; however, pain may recur due to incomplete lesioning or neural plasticity, necessitating revision (redo) surgery. This study evaluates the outcomes of redo DREZotomy in patients with recurrent deafferentation pain following traumatic BPA.

Methods: A retrospective, single-center review of six patients who underwent microsurgical DREZotomy for BPA-related neuropathic pain followed by revision DREZotomy for recurrence of pain between 2014 and 2025. Pain intensity was assessed using the visual analogue scale preoperatively, postprimary surgery, preredo, and postredo, along with documentation of the time to recurrence.

Results: The mean age of redo DREZotomy patients was 45.17 ± 15.42 years (range: 26–64). The preprimary DREZ pain score was 9.33 ± 0.82 , decreasing significantly to 5.17 ± 2.32 postoperatively ($p \leq 0.012$). The preredo pain score was 9.17 ± 0.75 , which improved markedly to 3.00 ± 1.67 following redo surgery ($p < 0.001$). A significant positive correlation was observed between the degree of pain reduction and time to recurrence ($r = 0.83$, $p \leq 0.041$), suggesting that greater initial pain relief predicted longer pain-free intervals. At final follow-up, 83.3% of patients achieved good pain relief, and 16.7% had poor outcomes.

Conclusions: Redo DREZotomy provides a safe and effective salvage option for patients with recurrent neuropathic pain following BPA. The procedure yields significant and durable pain relief, comparable to primary DREZotomy.