

# Incidental Durotomies: Does Surgeon Preference Affect Patient Outcomes?

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**INTRODUCTION:** There are various surgical approaches to resolving incidental durotomies. Surgeons often will address durotomy tears with primary repair, patches, glue or a compilation of these to minimize sequella, however superiority of these techniques has yet to be evaluated.

## METHODS:

This is a single-center retrospective chart review for adult patients who suffered incidental durotomies (ID) from 2015-2020 with minimum 1-year follow up. T-test and Chi-square analysis were used to compare the following outcomes: location of ID, type of surgery, portion of the procedure, procedure invasiveness, repair type (primary, patch, glue or combination), number of drains, total drain output, sequella of ID, neurological complications, days of bed flat status, return to operating room (RTO), readmission, and emergency room visit.

**RESULTS:** A total of 120 patients (mean age: 64.0±9.0, BMI:28.2±4.0kg/m<sup>2</sup>, gender: 49.6% female, days of bed flat status: 1.5±0.9, and total inpatient drainage: 548.1±848ml). ID was most prevalent at the lateral edge of the dural tube (53.0%). L3/L4 (24.2%) and L4/L5 (25%) were the most commonly injured levels. Laminectomy and fusion were most likely to incur a durotomy (46.6%). Surgeons were more likely to primarily repair the dura if the procedure was open compared to minimally invasive (26.7% vs. 11%, p=0.04). IDs occurred most frequently during decompression (78.5%), exposure (7.5%), thecal sac manipulation (4.7%), and cage trialing and placement (3.7%). Eighty-two (73%) of ID were primary repairs, 98.3% utilized glue, and 58 (48.3%) used a patch. During the hospital course, 20 patients (16.7%) experienced headache, 1 (0.8%) experienced a CSF Leak through the skin, 7 (5.8%) had a postoperative neurologic deficit, and 4 (3.3%) returned to the OR during their index stay. After discharge, there were 10 (8.3%) wound complications. At the first postoperative visit, 6 (5.0%) experienced headaches, 23 (19.2%) neuro deficits, 2 of which were noted to be due to intraoperative injury, 1 (0.8%) episode of Arachnoiditis, 2 (1.7%) CSF leaks through skin, and 4 (3.3%) pseudomeningoceles. In total, 8.5% of patients were readmitted within the next year, most commonly for wound drainage (6.7%).

**DISCUSSION AND CONCLUSION:** When comparing repairs that were primary to secondary, no significant differences in neurological complications, durotomy complications, infection, RTO, or readmission were observed. Defects that were patched were more likely to develop pseudomeningocele compared to those without patch; however, no differences in overall wound complications, RTO, neurological deficits, headaches, leaks, or other durotomy sequella.

Table 1: Demographics, Surgical Characteristics, Postoperative Stay, and Discharge Outcomes for Incidental Durotomies Repaired Primary or with a Patch

Comparison of patients who had incidental durotomy and were repaired by patch or no patch			
	No Patch	Patch	P value
N	66	54	
Gender (% Female)	31 (47.0%)	28 (52.8%)	0.5
Revision Surgery	17 (25.8%)	16 (29.6%)	0.6
Age	63.8 ± 13.1	63.8 ± 11.5	0.9
BMI	29.2 ± 6.1	29.6 ± 5.3	0.7
Surgical characteristics			
Levels fused	2.5 ± 1.8	3.5 ± 4.0	0.2
Primary repair	35 (52.4%)	47 (87.2%)	0.001
Muscle Overlay	5 (7.6%)	1 (1.9%)	0.152
EBL	481 ± 651	561 ± 802	0.6
Optime	257 ± 125	288 ± 161	0.7
Number of Drains	1.2 ± 1.1	1.2 ± 1.2	0.6
Post-operative stay			
Days after initiating ambulation to days of flat bed status	1.4 ± 0.8	1.6 ± 1.1	0.9
Headache	14 (21.2%)	6 (11.1%)	0.24
Neurodeficit	3 (4.5%)	4 (7.4%)	0.51
MRU/CT index	3 (4.5%)	2 (3.7%)	0.82
RTO index	2 (3.0%)	2 (3.7%)	0.84
CSF leak through skin	0 (0%)	1 (1.9%)	0.27
Surgical site infection	3 (4.5%)	2 (3.7%)	0.8
Length of Stay	4.8 ± 2.8	5.2 ± 3.6	0.5
Total drain output during stay	557 ± 899	536 ± 802	0.9
After Discharge			
Wound Complications	5 (7.6%)	5 (9.3%)	0.7
Antibiotics	2 (3.0%)	3 (5.6%)	0.5
Headache	4 (6.1%)	2 (3.7%)	0.6
Neurodeficit	10 (15.2%)	13 (24.1%)	0.2
Neurodeficit resolved by BMO	2 (3.0%)	4 (7.4%)	0.4
MRU/CT	10 (15.2%)	7 (13.0%)	0.7
Arachnoiditis	0 (0%)	0 (0%)	0.4
RTO 90days	4 (6.1%)	2 (3.7%)	0.6
RTO discharge - 6mo	4 (6.1%)	2 (3.7%)	0.6
CSF leak	1	1	
recurrent HNP	1	1	
Dehiscence	2	0	
ER visit - BMO	6 (9.1%)	2 (3.7%)	0.2
Readmission - BMO	1 (1.5%)	4 (7.4%)	0.6
CSF-leak through skin	2 (3.0%)	0 (0%)	0.2

  

	Primary Repair (N=82)	No Primary repair (N=30)	P value
Gender (% Female)	39 (47.6%)	16 (53.3%)	0.6
Revision Surgery	24 (29.3%)	7 (23.3%)	0.53
Age	64.6 ± 12.6	60.9 ± 12.1	0.17
BMI	29.5 ± 5.6	30.0 ± 5.6	0.7
Surgical characteristics			
Minimally invasive	9 (11.0%)	8 (26.7%)	0.04
Levels fused	2.4 ± 3.1	3.0 ± 3.1	0.43
Glue	80 (97.6%)	30 (100%)	0.34
Patched	51 (62.2%)	4 (13.3%)	0.001
Muscle Overlay	2 (2.4%)	4 (13.3%)	0.002
EBL	578 ± 819	299 ± 338	0.014
Optime	260 ± 141	244 ± 124	0.63
Osteotomy done	6 (7.3%)	2 (6.7%)	0.91
Number of Drains	1.2 ± 1.1	0.7 ± 1.1	0.04
Post-operative stay			
Days of Flat Bed Status	1.5 ± 1.0	1.4 ± 0.9	0.65
Headache	6 (20%)	12 (40%)	0.49
Neurodeficit	4 (4.9%)	1 (3.3%)	0.73
MRU/CT index	4 (4.9%)	0 (0%)	0.22
CSF leak through skin	1 (1.2%)	0 (0%)	0.54
Surgical site infection	5 (6.1%)	0 (0%)	0.17
Length of Stay	5.0 ± 3.4	4.3 ± 2.2	0.23
Total drain output during stay	468 ± 692	460 ± 834	0.96
After Discharge			
Wound Complications	7 (8.5%)	1 (3.3%)	0.34
Antibiotics	5 (6.1%)	0 (0%)	0.17
Headache	2 (2.4%)	1 (3.3%)	0.8
Meningocele	3 (3.7%)	0 (0%)	0.29
Neurodeficit	14 (17.1%)	6 (20.0%)	0.73
Neurodeficit resolved by BMO	1 (1.2%)	4 (13.3%)	0.73
MRU/CT	10 (12.2%)	5 (16.7%)	0.54
Arachnoiditis	0 (0%)	1 (3.3%)	0.02
RTO 1yr	5 (6.1%)	1 (3.3%)	0.57
CSF Leak	2	1	
Cauda Equina Syndrome	2	0	
Dehiscence	1	0	
ER visit - 1yr	5 (6.1%)	1 (3.3%)	0.57
Readmission - 1yr	7 (8.5%)	2 (6.7%)	0.73
CSF-leak through skin	0 (0%)	1 (3.3%)	0.01
Persistent neurodeficit	10 (12.2%)	5 (16.7%)	0.54