

Supplemental Digital Content 2

Supplemental Tables

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Supplemental Tables

Table S.1: Demographic details of dataset consisting of impedance field telemetry (IFT) recordings and computed tomography (CT) scans. F, female; M, male; R, right; L, left; Ext., extracochlear; El., electrodes. All cases were implanted with a FLEX²⁸ electrode array.

N	ID	Side	Age at Surgery (years)	Gender	Ext. El.	Active El.	N IFTs	Surgery to 1 st CT (days)	1 st to 2 nd CT (days)
1	S01a	L	9	F	0	12	11	0	-
2	S01b	R	6	F	0	12	17	0	924
3	S02b	R	44	F	0	12	13	32	-
4	S03a	L	52	M	3	10	2	28	-
5	S03b	R	55	M	0	12	8	28	-
6	S04b	R	73	F	0	12	10	32	-
7	S07b	R	70	F	3	9	14	1	-
8	S08a	L	62	M	0	12	11	32	-
9	S08b	R	61	M	0	12	14	28	-
10	S09b	R	60	M	1	11	11	28	-
11	S10b	R	71	F	0	12	8	28	-
12	S11	R	43	F	0	12	14	28	1371
13	S12a	L	40	F	0	12	11	28	386
14	S12b	R	41	F	0	12	7	28	-
15	S18a	L	35	F	3	10	20	28	-
16	S18b	R	39	F	0	12	11	28	-
17	S22	R	53	F	0	12	10	33	-
18	S24a	L	52	F	0	12	16	0	581
19	S24b	R	53	F	0	12	12	28	-
20	S26a	L	65	F	0	12	8	29	-
21	S26b	R	61	F	0	12	14	28	1212
22	S27b	R	73	F	0	12	16	28	-
23	S28a	L	24	F	0	12	12	0	-
24	S30b	R	57	M	0	12	11	0	-
25	S34	L	22	M	0	12	5	29	-
26	S35a	L	76	F	0	12	6	29	-
27	S36	R	7	F	0	12	13	32	-
28	S40	R	48	M	0	12	16	28	-
29	S42	R	46	F	0	12	16	29	-
30	S46	L	39	F	0	N/A	13	1	-
31	S49	R	35	M	0	12	10	0	-
32	S50	L	39	F	0	12	14	28	-
33	S52	L	20	F	0	12	10	0	-
34	S56	R	67	F	0	10	13	1	-
35	S57b	R	39	F	0	12	10	28	-
36	S58	R	59	M	0	12	11	0	-
37	S60	R	50	M	2	8	19	0	-
38	S61	R	77	F	2	11	12	0	-
39	S62	R	79	F	1	12	12	0	-
40	S63	R	22	F	0	12	13	0	-
41	S64a	L	59	F	0	12	9	1	-
42	S67a	L	63	F	1	12	8	28	-
43	S70a	L	0	F	0	12	11	0	-
44	S70b	R	0	F	0	12	15	0	-
45	S72b	R	2	M	0	12	32	0	-
46	S73b	R	38	F	0	11	9	0	-
47	S74b	R	2	M	0	10	18	0	-
48	S75b	R	50	M	0	12	7	28	-
49	S76b	R	35	M	0	12	7	0	-
50	S77b	R	57	M	0	12	6	32	-
51	S82a	L	23	F	0	12	5	32	-
52	S85a	L	81	M	0	12	7	30	-
53	S87b	R	40	F	0	12	7	29	-
54	S88b	R	1	M	0	12	7	0	-
55	S89b	R	80	M	2	10	2	28	-
56	S111a	L	75	M	0	12	7	29	-

Table S.2: Linear mixed-effects model summary table for tissue resistances (in k Ω). R, right; M, male; CI, confidence interval.

	Coefficient	95% CI	p-value
<i>Intercept</i>	1.48	[1.36; 1.59]	<.001
Time (months)	0.003	[0.002; 0.004]	<.001
Electrode2	-0.11	[-0.13; -0.1]	<.001
Electrode3	-0.18	[-0.2; -0.17]	<.001
Electrode4	-0.23	[-0.25; -0.21]	<.001
Electrode5	-0.25	[-0.27; -0.23]	<.001
Electrode6	-0.28	[-0.29; -0.26]	<.001
Electrode7	-0.28	[-0.29; -0.26]	<.001
Electrode8	-0.29	[-0.3; -0.27]	<.001
Electrode9	-0.33	[-0.35; -0.31]	<.001
Electrode10	-0.4	[-0.41; -0.38]	<.001
Electrode11	-0.45	[-0.47; -0.44]	<.001
Electrode12	-0.42	[-0.44; -0.41]	<.001
Side _R	0.01	[-0.08; 0.11]	.77
Gender _M	-0.14	[-0.24; -0.05]	.005
Age	-0.002	[-0.004; 0.0002]	.09
Time:Electrode2	-0.0004	[-0.001; 0.0005]	.42
Time:Electrode3	-0.0005	[-0.001; 0.0004]	.26
Time:Electrode4	-0.0001	[-0.001; 0.0008]	.77
Time:Electrode5	-0.0002	[-0.001; 0.001]	.72
Time:Electrode6	0.0007	[-0.0002; 0.002]	.14
Time:Electrode7	0.0008	[-0.0001; 0.002]	.07
Time:Electrode8	0.0005	[-0.0004; 0.001]	.28
Time:Electrode9	0.0003	[-0.001; 0.001]	.49
Time:Electrode10	0.0004	[-0.0005; 0.001]	.37
Time:Electrode11	0.001	[0.0001; 0.002]	.02
Time:Electrode12	0.002	[0.001; 0.003]	<.001
Num. obs.	5820		
Num. groups: Cases	42		

Table S.3: Linear mixed-effects model summary table for standardized tissue resistances. CI, confidence interval.

	Coefficient	95% CI	p-value
<i>Intercept</i>	-1.64	[-1.72; -1.55]	<.001
Insertion depth (mm)	0.12	[0.12; 0.13]	<.001
Calibration category _{late}	-0.05	[-0.13; 0.02]	.15
Num. obs.	564		
Num. groups: Cases	47		

Table S.4: Comparison of electrode insertion depth estimation performance between the early, late, and merged phenomenological model based on 5 cases with a second postoperative CT scan of the same ear. Performance is given as the mean \pm standard deviation of the absolute error compared to ground truth values from CT scans.

	First CT	Second CT
Early	0.57 mm \pm 0.33 mm	0.39 mm \pm 0.3 mm
Late	0.62 mm \pm 0.24 mm	0.52 mm \pm 0.3 mm
Merged	0.55 mm \pm 0.26 mm	0.41 mm \pm 0.25 mm