



Intraoperative Auricular Acupuncture Among Total Hip Arthroplasty Patients is Associated with Reduced Opioid Use in Opioid-Tolerant Patients

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INTRODUCTION

- Opioid-tolerant patients undergoing elective orthopedic surgery have complex pain management challenges
- Intraoperative auricular acupuncture through the **CHENG Protocol** may enhance multimodal analgesia by reducing pain, stress, and inflammation

Aim: To investigate the effects of intraoperative acupuncture for high-risk groups, such as patients with chronic preoperative opioid use

METHODS

- Retrospective study using institutional data from January 2021 to March 2025.
- Overall, **544 patients were opioid-tolerant** → patients who are on chronic pain medications prior to their elective THA
- Three groups were analyzed:
 - With acupuncture, without PNB (Acu+PNB-; n=44)
 - Without acupuncture, with PNB (Acu-PNB+; n=186)
 - Without acupuncture nor PNBs (Acu-PNB-; n=314)
- Primary outcome: total opioid utilization (MME) within 48 hours after surgery
- Regression models measured associations between intervention groups and outcomes

“Intraoperative auricular acupuncture using the CHENG Protocol may reduce opioid use among patients with chronic opioid use”

Table 1: Demographic Characteristics

	INPATIENTS (n=402)				OUTPATIENTS (n=142)			
	Acu-PNB+, Acu-PNB- (n=369)		Acu+PNB- (n=33)		Acu-PNB+, Acu-PNB- (n=131)		Acu+PNB- (n=11)	
	N	%	N	%	N	%	N	%
Female Sex	219	59.35	26	78.79	65	49.62	4	36.36
ASA Comorbidity								
1	1	0.27	0	0	1	0.76	0	0
2	216	58.54	15	45.45	104	79.39	6	54.55
3	152	41.19	18	54.55	26	19.85	5	45.45
Age Category								
35-44	10	2.71	3	9.09	3	2.29	1	9.09
45-54	35	9.49	4	12.12	18	13.74	2	18.18
55-64	111	30.08	9	27.27	57	43.51	7	63.64
65-74	136	36.86	8	24.24	44	33.59	0	0
75-84	63	17.07	8	24.24	9	6.87	0	0
85+	14	3.79	1	3.03	0	0	1	9.09
Primary Anesthetic Modality								
General								
Anesthesia	60	16.26	0	0	8	6.11	0	0
Neuraxial Block	309	83.74	33	100	123	93.89	11	100
Antiemetic Use	71	19.24	7	21.21	14	10.69	1	9.09
Acute Pain Consult	31	8.4	6	18.18	3	2.29	0	0
Prolonged Length of Hospital Stay (75 th percentile)	258	69.92	17	51.52	n/a	n/a	n/a	n/a
High Opioid (MME) use, 48 hours (75 th percentile)	218	59.08	21	63.64	50	38.17	6	54.55
Number of PNBs								
0	232	62.87	33	100	82	62.60	11	100
1	46	12.47	0	0	17	12.98	0	0
2	91	24.66	0	0	32	24.43	0	0

Table 2: Adjusted Outcomes Comparing the Three Cohorts

Postoperative Outcomes	Inpatient Adjusted Mean (95% CI)	Outpatient Adjusted Mean (95% CI)	P-value* (Inpatient)	P-value* (Outpatient)
Opioid Use (MME)				
Acu-PNB-	106.6 (65.1, 206.3)	36.0 (12.6, 102.8)	—	—
Acu-PNB+	122.8 (64.2, 234.9)	50.2 (18.4, 137.2)	0.33	0.695
Acu+PNB-	83.5 (42.3, 165.2)	30.5 (10.3, 90.9)	0.0006	0.945
Length of Hospital Stay (Hours)				
Acu-PNB-	90.1 (52.9, 153.4)	10.5 (5.5, 20.2)	—	—
Acu-PNB+	85.5 (50.6, 144.5)	11.3 (6.0, 21.4)	0.467	0.513
Acu+PNB-	53.5 (30.5, 93.9)	10.2 (5.1, 20.4)	0.0001	0.904

*each P-value compares the row to the reference group "Acu-PNB-"

Abbreviations: confidence interval (CI), milligram morphine equivalents (MME), peripheral nerve block (PNB).

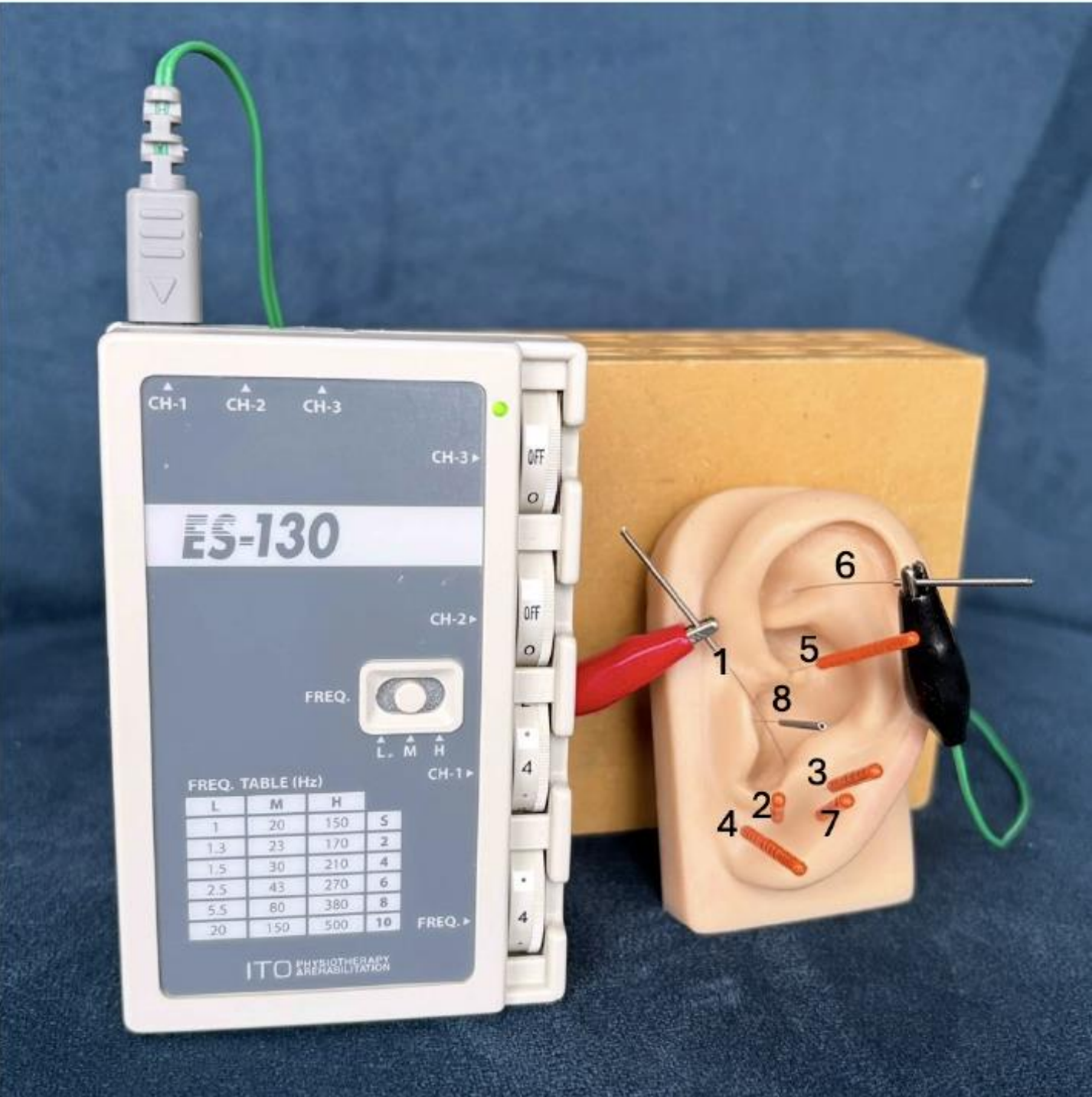


Figure 1: Mockup of the CHENG Protocol
1. Hypothalamus (Red Lead)
2. Amygdala
3. Hippocampus
4. Prefrontal Cortex
5. Point Zero
6. Shen Men (Black Lead)
7. Insula
8. Vagus

RESULTS

- The primary anesthetic modality was a neuraxial block, and no patients receiving intraoperative acupuncture had general anesthesia
- Only 7.35% required an acute pain consult and 35.48% received antiemetic medications in the acute postoperative period
- Among inpatients, 70% of patients who didn’t receive acupuncture and 51.5% Acu+PNB- had a long LOS (top 75th percentile)
- In adjusted analyses for inpatients, the Acu+PNB- group had the lowest 48-hour opioid consumption (83.5 MME) compared to Acu-PNB+ (122.8 MME; p=0.0057) and Acu-PNB- (106.6 MME; p=0.0006)
- Similarly, Acu+PNB- had significantly lower LOS (53.5 hours) compared to Acu-PNB+ (85.5 hours; p=0.0009) and Acu-PNB- (90.1 hours; p=0.0001)
- No significant differences in outcomes were identified for outpatient cases.

DISCUSSION

- Intraoperative auricular acupuncture using the CHENG protocol may reduce opioid use among patients with chronic opioid use, particularly in those requiring inpatient stays after THA
- Given the complexities associated with managing these high-risk patients, these findings warrant further investigation into this promising non-pharmacologic adjunct to standard care, especially for patients with a complex pain history