

# Continuous wound infusion versus regional anesthesia techniques for auricular reconstruction postoperative pain management.

a - Division of Otolaryngology-Head and Neck Surgery, Texas Children's Hospital, Houston, Texas, USA

b - Department of Anesthesiology, Perioperative and Pain Medicine, Texas Children's Hospital, Texas USA

Yusif Hajiyevev, MD<sup>a</sup>;  
Karla E. Wyatt, MD, MS<sup>b</sup>;  
Rodrigo Silva, MD<sup>a</sup>;  
Yi-Chun Carol Liu, MD<sup>a</sup>

## BACKGROUND

The use of autologous rib graft during auricular reconstruction for microtia has the advantages of inherent biocompatibility and long-term stability. However, the associated postoperative pain is of significant concern and adequate analgesia is essential..

## PURPOSE

We aimed to evaluate the effects of a continuous thoracic paravertebral nerve block (TPVB), erector spinae plane block with a catheter (ESPC) (ESP), and continuous wound infusion (CWI) on postoperative outcomes. We present a study compares a comparison of a continuous paravertebral nerve block (TPVB TPVB), ), erector spinae plane block with a catheter (ESPC)ESPC, and CWI all three post-operative pain controls for pediatric stage 1 microtia reconstruction, evaluating. and evaluates their impact on post-postoperative opioid use, hospital length of stay, and patient-reported pain scores.

## METHODS

Patients undergoing the first stage of auricular reconstruction using the Firmin Nagata technique from September 2018 –December 2021, were reviewed. All patients received multimodal analgesic regimens consisting of TPVB, ESPC, or CWI catheter, followed by IV or PO acetaminophen, NSAIDs nonsteroidal anti-inflammatory medications, and opioids. The demographic distribution, pain scores, opioid utilization (measured in morphine milligram equivalents/kilogram, MME/kg), and hospital length of stay (LOS) were compared between the three groups.

**Table 1** Patients Characteristics by Group .

	ESP (n=5)	PVSB (n=6)	CWI (n=11)	Total (N=22)	p-value
Age <sub>7</sub>	9 (9-10)	10 (9.3-10.)	12 (11.5-1)	10.5 (9.3-12)	
Female	3 (60)	4 (66.7)	4 (36.4)	11 (50.0%)	
Hispanic	4 (80%)	4 (66.7%)	11 (100%)	19 (86.4%)	
Non-Hispanic	1 (20%)	2 (33.3%)	0 (0%)	3 (13.6%)	
Microtia grade, No. (%)					0.8587
I	0 (0%)	0 (0%)	1 (9.1%)	1 (4.5%)	
II	1 (20%)	2 (33.3%)	3 (27.3%)	6 (27.3%)	
III	4 (80%)	4 (66.7%)	7 (63.6%)	15 (68.2%)	

**Table 2.** Outcome Measures.a

Analgesics	ESP	PVSB	CWI	p-value
Analgesics	-	-	-	-
Total opioid use, MME/kg	0.6 (0.6-1.2)	1.7(1.-2.2)	0 (0-0.1)	0.0004
Acetaminophen, mg/kg <sup>b</sup>	136 (72.6-138)	161.5 (51.1-174.3)	83.3 (57-86)	0.2627
Ibuprofen, mg/kg	35.5 (23.9-51.7)	30 (24.6-40)	32.7 (16-51.4)	0.9758
Ketorolac (mg/kg)	3.6 (3.5-3.6)	5.5 (4.9-5.5)	1.81 (0.82-3.65)	0.0076

## RESULTS

Twenty-two patients were included: continuous TPV PVB (6), ESPC (5), and CWI (11). The mean age was 11.6 years (SD, 2.9; range, 9-17), and 11 (50%) were female. The CWI group utilized the lowest amount of opioids when compared to TPVBPVB and ESPC (0.1 vs. 1.63 vs. 0.92, p = .0004). There whereas no differences in pain scores or hospital LOS among the groups. There were no statistically significant differences between the TPVB, ESPC, and CWI groups in terms of sex, BMI, ethnicity, or race, nor were there any differences between the groups in any reported side effects, such as vomiting, nausea, and constipation. The average hospital length of stay was 5 days in the TPVB group, 3.8 days in the ESPC group, 4.327 days in the CWI group, and 5 days in the TPVB group. Age at the time of surgery, sex, and BMI z score category were not statistically significant in relation not significant to ly associated with the length of hospital stay.

## CONCLUSION

The multimodal adjuncts of TPVB, ESPC, and CWI techniques for auricular reconstruction surgery provide statistically similar post-operative pain management. Analgesia and hospital length of stay, with base on pain scores, although CWI patients minimized required less opioid consumption observed among patients who received CWIs. An additional controlled study is needed for further evaluation between the intramural injection group vs. the wound infusion group.

## REFERENCES

[Liu Y-CC, Kini S, Barton G, Pham T, Marcet-Gonzalez J, Novak B. Implementation of auricular malformation screenings in the newborn population. \*Int J Pediatr Otorhinolaryngol.\* 2020;133:109999. Beahm EK, Walton RL. Auricular reconstruction for microtia: part I. Anatomy, embryology, and clinical evaluation. \*Plast Reconstr Surg.\* 2002;109\(7\):247-2482; quiz following 2482. doi:10.1097/00006534-200206000-00046](#)