49th Annual Regional Anesthesiology and Acute Pain Medicine Meeting
March 21-23, 2024 | San Diego, CA
ASRA PAIN MEDICINE

Low Incidence of Perioperative Complications During Pterygopalatine Fossa Nerve Blocks in Pediatric Populations: A Retrospective Chart Review

Niralee Patel; Devin Patel; David Vanderbilt; Garrett Dennis; Regina Knudsen, MS; Amy Gunnett, RN, BSN, CCRC; Cameron Smith, MD, PhD
Department of Anesthesiology, University of Florida College of Medicine, Gainesville

BACKGROUND

- Pterygopalatine fossa nerve blocks (PPFBs) are being utilized in adults for the management of postoperative pain and head and neck pain. [1]
- They represent an opioid-sparing treatment strategy and contribute to an increase in functional capacity. [1]
- In pediatrics, as well, PPFBs present an attractive option for regional pain control in acute care settings.
- However, hesitancy around the procedure remains as it requires advancing a needle into a deep, small space at the skull base.
- Anatomical differences between adults and children may only increase hesitancy.
- Additionally, lack of structured safety reports in the literature pertaining to the PPFBs in children may not help providers interested in performing this procedure for acute pain control.

STUDY AIM

- To fill this gap in safety data for PPFBs in pediatrics, this study aimed to characterize the safety of PPFBs in pediatrics when performed via a suprazygomatic approach. We hypothesized this procedure to be safe when performed under aforementioned conditions.

IRB APPROVAL STATEMENT

- This case series is devoid of patient-identifiable information and poses minimal risk, thus it is exempt from IRB review requirements as per UF Health Center Institutional Review Board policy.

COHORT CHARACTERISTICS

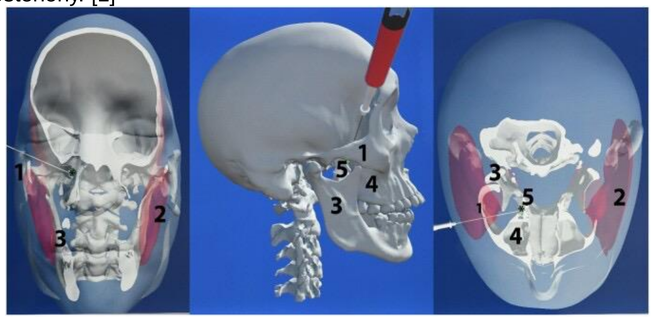
- A total of 589 subjects (53% male, 60% White followed by 23% Black or African American) resulted in 1178 PPFBs.
- The age range of the patients was 9 months to 18 years (mean age 7.1 years).

METHODS

- In this retrospective chart review, records of pediatric patients who underwent PPFBs between January 1, 2016, and June 30, 2020 at the University of Florida (UF) were examined.
- Inclusion criteria required the patient to be under 18 years of age and to have received a PPFB nerve block at UF.
- Indications for the PPFBs included control of postoperative pain, commonly from cleft palate repairs, tonsillectomies/adenoidectomies.
- The block medication consisted of ropivacaine, with or without the addition of dexamethasone.
- All of the nerve block procedures were performed using a suprazygomatic approach in the operating room after the induction of general anesthesia.
- Appropriate clinical data describing the PPFBs was extracted from electronic medical records. Descriptive statistics were calculated on all variables.

Nerve block procedure

- To maximize safety, a 25- gauge , 5 cm long spinal needle was used during this procedure. [1]
- The needle entry point is 1 to 1.5 cm superior to the zygomatic arch and posterior to posterior orbital rim. [1]
- Initially, the needle is directed perpendicular to the skin while advancing 1 cm to pass the zygomatic arch. [1]
- Then, the needle is directed approximately 30 degrees caudad and advanced approximately 5 cm through the muscles of mastication into the pterygopalatine fossa (asterisk in the below figure), between the maxilla anteriorly and pterygoid process posteriorly. [1]



RESULTS

- Of 589 total subjects, only 7 had some noted adverse effects like minor skin bleeding or bruising at the needle insertion site. The complications were quickly resolved by applying direct pressure.
- Additionally, the nursing notes reported no adverse events after the surgery in the PACU.
- During the block placement, all subjects had no more than a 20% change in blood pressure and heart rate when compared to baseline.
- Because labs are not routinely collected at this institution on pediatric patients, they were not considered for before and after effects.
- The mean pain score, collected approximately one hour after the surgery, was 2.1 (standard deviation ± 2.6) on the standard 0-10 numeric rating scale.

DISCUSSION

- From this results, we have not identified any clinically significant adverse effects from PPFBs when performed in a large cohort of pediatric patients in the hospital setting.
- The biggest limitation concerning safety might be that the lack of serious complications in our cohort may not allow to understand the true incidence or severity of procedure-related events when they do occur even if seemingly rarely.
- Similarly, adverse events occurring days or weeks after the procedure may not be detected with this study design.
- Large-scale, prospective studies are needed to assess the prevalence of adverse events.

CONCLUSION

We conclude that PPFBs are a safe and well-tolerated procedure for pain management. Further multi-center studies are recommended to confirm the results.

1. Smith CR, Dickinson KJ, Carrazana G, et al. Ultrasound-Guided Suprazygomatic Nerve Blocks to the Pterygopalatine Fossa: A Safe Procedure. Pain Med. 2022;23(8):1366-1375. doi:10.1093/pm/pnac007

ACKNOWLEDGEMENT Thank you to our Department Clinical Research Team for help with data collection and editing final report.

UF UNIVERSITY of FLORIDA
UFHealth UNIVERSITY OF FLORIDA HEALTH