ORIGINAL ARTICLE

Postoperative Pain and Analgesia in Children Undergoing Palatal Surgery: A Retrospective Chart Review

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Purpose: *Pediatric patients undergoing palatal surgery may experience significant postoperative pain. Undertreatment of acute postoperative pain may impact postoperative bleeding and recovery. The primary objectives of this study were to evaluate the severity of acute postoperative pain scores, analgesia management, and discharge times after palatal surgery.*
Design and Methods: *A retrospective chart review was performed for all patients aged < 18 years, born with cleft palate who underwent palatal surgery over a 1-year period. The primary outcome variable was the highest pain score recorded by the nursing staff at various time frames postoperatively.*
Findings: *Overall, the infant/toddler group demonstrated higher postoperative pain scores throughout the first 24 hours (1- to 6-hour period,* P *= .015). The duration of hospital stay was significantly greater in the infant/toddler age group (*P *< .001).*
Conclusion: *The results of our study indicate that frequent pain monitoring, multimodal approach, and "round-the-clock" analgesics may be warranted in this vulnerable patient population.*

Keywords: *children, pain, analgesia, surgery, palatoplasty, PACU.*

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THE CENTERS FOR DISEASE CONTROL has collected data indicating that the incidence of cleft lip and/or palate is approximately 1.7 per 1,000 live births, making it the most common congenital birth defect.[1] Cleft lip/palate can result in a number of functional impairments and should be repaired early in life in a systematic fashion.

The clinical presentation of a cleft palate may take the form of (1) a complete cleft palate extending from the alveolus through the uvula, (2) an incomplete cleft palate usually extending from the incisive foramen posteriorly through the uvula, and (3) a soft palate cleft from the junction of the hard palate posteriorly through the uvula. A submucous cleft palate is an additional unique presentation where the levator muscles are abnormally inserted into the posterior hard palate but the overlying oral mucosa is intact. A separate surgical

procedure is required to repair alveolar cleft with autologous bone along with repair of anterior palate. Furthermore, palatal surgery may include palatal lengthening or velopharyngeal surgery such as pharyngeal flap or sphincter pharyngoplasty.

Regardless of the cleft palate type, surgical repair at approximately 1 year of age allows cleft palate patients to mimic sounds and speech appropriately. Furthermore, patients with a cleft palate may subsequently present for palatal revision surgery. Several techniques of repair exist with the same goals to establish closure of the oral cavity from the nasal cavity and correct the position of the levator muscles.[2] Wide undermining of soft tissue and use of relaxing incisions that may be left open are common to these techniques and may result in significant postoperative pain. Patients for palatal surgery are admitted for overnight observation for pain control, airway patency, and evaluate the ability to intake oral liquids. Since poor pain control can lead to decrease in oral intake, this may become a significant factor in delaying discharge.

Understanding the effects of various pain management techniques on pediatric patients is essential in providing effective care. Hence, our outcome study focuses on the evaluation of the severity of pain and postoperative pain management and its impact on recovery characteristics after palatal surgery (in children born with cleft palate) at our institute. The primary objective of our study was to evaluate the severity of pain scores in pediatric patients in the postanesthesia care unit (PACU) and in the postoperative admissions unit during the first 24 hours after palatal surgery. The secondary objectives of our study were to evaluate postoperative analgesic management and times to discharge from the PACU and the hospital.

Methods

This retrospective study was evaluated by the Penn State Hershey Medical Center Institutional Review Board and deemed institutional review board exempt. All patients aged < 18 years with a history of cleft palate who underwent palatal surgery at Penn State Hershey Children's Hospital and Medical Center from January 1, 2012, to December 31, 2012, were eligible to be included in the study. Of the 69 patients, 65 patient records were available for review. Children whose pain was evaluated with pain scales using a 0 to 10 rating scale were included in the analysis, to facilitate comparisons of pain scores across different age group and corresponding pain scales used by the nursing staff. Eleven patients were excluded from the study because the pain scale used a 0 to 5 scoring system (University of Wisconsin Children's Hospital pain scale). An additional three patients were excluded due to inadequate charting of postoperative pain scores. After these omissions, a total of 51 complete patient charts were used for analysis. One patient underwent two palatoplasty procedures during the time frame under investigation, and both of these procedures were considered in the study as two separate data sets.

Operative procedures documented in this study included: palatoplasty for cleft palate (soft and/or hard palate only), palatoplasty for cleft palate (with closure of alveolar ridge; soft tissue only), palatoplasty with bone graft to alveolar ridge (includes obtaining graft), palatoplasty for cleft palate (major revision), palatoplasty with secondary lengthening procedure, and palatoplasty with attachment of pharyngeal flap. Patients who had undergone these procedures were identified by searching the billing record database. Subsequently, electronic medical records were retrieved to collect data on all patients.

Data collected included age, sex, ethnicity, weight, American Society of Anesthesiologists physical status, use of local anesthetic, intraoperative and postoperative opioid/nonopioid administration, highest pain scores in the PACU and the postoperative admissions unit (where the patient would be admitted after discharge from the PACU), PACU discharge time, and hospital discharge time. The primary outcome measured in the study was the highest pain score recorded in the first hour while in PACU and subsequently 6-hourly postoperative time periods within the first 24 hours. The time periods (starting from arrival to the PACU) included were 0 to < 1 hour, 1 to < 6 hours, 6 to < 12 hours, 12 to < 18 hours, and 18 to 24 hours. If multiple pain scores were recorded during any of the time periods, the highest of these scores was used for analysis. Postoperative pain was quantified using the Wong-Baker scale, Face, Legs, Activity, Cry, Consolability (FLACC) scale, and the Numerical