High Risk of Postoperative Urinary Retention in 1-Year-Old Cleft Palate Patients: An Observational Study

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Purpose: *Estimate the frequency of urinary catheterizations in a high-risk population of children.*
Design: *It was a descriptive, observational study.*
Methods: *Incidence of postoperative urinary retention was recorded for one-year-old cleft palate surgery patients admitted to the postanaesthesia care unit or pediatric intensive care unit at Rikshospitalet, Oslo University Hospital, Norway.*
Finding: *Forty-five out of 70 patients (64%) were catheterized once or several times during the perioperative period. Furthermore, a total of 40 out of 54 patients (74%) had a bladder volume 60 mL or more measured by ultrasound scanner; 10 of these measured volumes exceeded twice the bladder capacity.*
Conclusions: *Postoperative urinary retention was discovered in 64% of patients; some of them were catheterized more than once during the perioperative period. Based on these data and the departmental procedure for postoperative care of these patients, the results indicated the need for an indwelling catheter.*

Keywords: *postoperative care, pediatrics, urinary retention, urinary catheterization.*

POSTOPERATIVE URINARY RETENTION (POUR) is a well-known complication of adult patients in the postanaesthesia care unit (PACU). Bladder distension can cause permanent damage to the detrusor muscle, which may lead to incomplete emptying of the bladder and an increased risk of urinary tract infections.[1] If POUR is not discovered, it will lead to acute prolonged bladder overdistention, which is a serious complication that is often unrecognized. Duration of bladder overdistention and the amount of urine volume required to cause chronic voiding problems is an area of discussion.[2] Bladder catheterization is an invasive procedure that could cause patients

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Financial support: None.
Conflict of interest: None to report.
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1089-9472/$36.00
http://dx.doi.org/10.1016/j.jopan.2014.05.016

discomfort, catheter-related infections, and other complications.[3] In an attempt to avoid unnecessary catheterizations, POUR can be identified by measuring the bladder volume with an automatic ultrasound scanner.

There are several studies discussing POUR in adults,[4–6] but the incidence in children is relatively unknown. POUR is found to be associated with postoperative opioid analgesia.[7] An audit by Cropper et al[8] aimed to identify the incidence of POUR in children (n = 180) receiving analgesia. The results indicated that the overall rate of urinary retention requiring catheterization was only 5%. However, because 22% of the patients were catheterized during the operation, a lot of patients at risk were excluded.

Research has indicated that opioid analgesia may influence the development of POUR.[9] Experience from clinical practice in our hospital indicated that cleft palate surgery patients were one patient group that had a high incidence of POUR. We believed that the incidence of POUR after cleft palate surgery would be high because of advanced pain treatment and sedation.

The aim of this study was to estimate the incidence of POUR detected by urinary catheterizations in 1-year-old children under postoperative observation after cleft palate surgery.

Methods

Ethics

The local representative of Data Inspectorate at Oslo University Hospital–Rikshospitalet, classified this study as a quality assurance project.

Patients

Our study population was 1-year-old cleft palate surgery patients admitted to Rikshospitalet in 2007. Inclusion criteria were cleft palate surgery and age less than 24 months. The exclusion criterion was indwelling catheter. We prospectively collected data pertaining to urinary retention and analyzed this retrospectively.

In accordance with departmental guidelines, the patients were not given a permanent catheter before the operation. The patients were premedicated with oral midazolam 0.4 mg/kg and rectal paracetamol 40 mg/kg. General anesthesia was induced with fentanyl 3 μg/kg and thiopental sodium 10 to 15 mg/kg intravenously, or by inhalation of sevoflurane and N_2O, and maintained by isoflurane and N_2O, supplemented with IV fentanyl 3 to 6 μg/kg. Before intubation, neuromuscular blockade was obtained with cisatracurium 0.07 to 0.10 mg/kg. All patients were given IV dexamethasone 0.3 mg/kg. All patients were given IV Salidex Braun (glucose 35 g/L, sodium 50 mmol/L, and chloride 50 mmol/L) 4 mL/kg (Braun Melsungen AG, Melsungen, Germany). All patients who met the inclusion criteria when admitted to the PACU or the pediatric intensive care unit (PICU) were included. The children were observed and treated according to the departmental guidelines. The postoperative period ranged from admission to the PACU and/or PICU until 7 a.m. the next day. Patients were admitted to the PICU when overnight observation was indicated.

Postanesthesia Care Unit/Pediatric Intensive Care Unit

The PACU is a 21-bed unit, where five beds are pediatric beds. One nurse cared for one to two pediatric patients, and children admitted to this unit came from all divisions at Rikshospitalet. The PICU is a nine-bed unit where both medical and surgical patients are admitted. The main part of this study was carried out in the PACU, and the results from PACU and/or PICU are presented as one.

Indication and Performance of Bladder Emptying

According to departmental procedure, POUR was defined as a bladder volume above the bladder capacity, calculated by the formula: age (years) $\times$ 30 + 30 mL.[10] The bladder volume was monitored using an ultrasound scanner (BladderScan BVI-3000; Verathon Inc. Corporate, Bothell, WA). Based on the nurses' assessment (eg, the patient did not void, became restless), an ultrasound scan was performed. If the bladder volume exceeded 60 mL, the nurses contacted the anesthetist. The decision to perform bladder emptying was taken by the anesthetist in charge, who also carried out the