The incidence of pediatric obesity is on the rise. Because pediatric overweight and obese patients are presenting for elective surgery in the day surgery setting, there are concerns regarding perioperative complications in this population. Although there is a paucity of studies specific to the pediatric population, respiratory symptoms, airway management concerns, prolonged postanesthesia care unit (PACU) stays, and increased emesis are significantly more common in pediatric patients with an elevated body mass index (BMI). This resource guide will provide assistance to nurses and other healthcare providers to increase their awareness of the perioperative complications of pediatric patients with an elevated BMI in the day surgery setting.

**Introduction**

It is well known that an adult patient with an elevated body mass index (BMI) is at higher risk for certain perioperative complications. Retrospective and prospective studies have also revealed that perioperative complications are more common in the pediatric perioperative setting if the patient has an elevated BMI. Childhood obesity has increased substantially in industrialized nations. The numbers vary by nation, but incidence has been recorded as high as 43%. In the United States, comparing the 20 years between the early 1960s and the late 1970s, the incidence of obesity in 6-to-11-year-olds increased by 54%. Morbid obesity increased by 98% during the same timeframe. This trend becomes even more disturbing in light of the fact that 50% of obese children and 75% of obese adolescents become obese adults. Approximately one third of patients presenting to pediatric day surgery units are overweight or obese.

Perioperative providers anticipate obese adult patients to present with comorbidities and screen them accordingly. These common comorbidities are also present in the pediatric population. There is a higher incidence of bronchial asthma, obstructive sleep apnea, reduced respiratory function including a reduction in the functional residual capacity (FRC), increased work of breathing and anatomical airway changes. In regards to the cardiovascular system, hypertension will likely be present. The obese patient will have a tendency toward noninsulin-dependent diabetes, fatty liver infiltration, and gastro-esophageal reflux disease. However, it has not been demonstrated that these patients have higher gastric fluid volumes or decreased gastric emptying.

The obese pediatric patient is more likely to have perioperative complications if these comorbid conditions are present. The healthcare provider may experience difficulty with mask induction and intubation in the operating room and laryngoscopy may prove problematic due to the anatomical differences. Studies, however, have not demonstrated a higher risk of bronchospasm or pulmonary aspiration. The risk of aspiration increases if the patient has obstructive sleep apnea. The decision to administer a premedication, as well as how to calculate medications properly, has to be balanced between the likelihood of respiratory depression and the need for anxiolysis. Most drug doses are calculated based on lean body mass, which may be difficult to determine in this population. Obtaining preoperative intravenous access may be a problem. Medications should not be administered IM because the medication may only reach adipose tissue and not muscle. Monitoring may present a problem especially with proper sizing of the blood pressure cuff. Intravenous catheter insertion is hampered by the presence of adipose tissue. Positioning of the patient during the postanesthesia care unit (PACU) stay should be carefully considered, especially if the patient has a history of sleep apnea. The recumbent position may be helpful, as it allows the abdomen to shift away from the airway.
anti-emetic agents. Their PACU stay is often prolonged compared to the leaner pediatric patient. For the reasons outlined above, overweight and obese pediatric patient can present a challenge in the day surgery setting. An astute and attentive healthcare professional should be aware of the potential for complications and should be prepared to address the unique concerns of this population. In order to assist the healthcare provider care for this patient population, a selection of research studies and papers that address these issues has been compiled.

Materials and Methods

PubMed and CINHAL were used to locate quantitative or qualitative research about perioperative preparation of obese children. Results were limited to English language and the scope of the search was from 1980 to 2011. The following search terms were used: anesthesia, Body Mass Index (BMI), complications, obese, overweight, pediatric, surgery, pediatric surgery, perioperative. This bibliographic review should not be considered an exhaustive list of knowledge on the common perioperative complications of a pediatric patient with an elevated BMI.

Bibliographic Findings

The bibliographic findings in this article were selected due to the contribution they provide regarding common perioperative complications in the pediatric population with elevated BMI. Citations are categorized under the headings “comprehensive knowledge” and “perioperative care.”

Comprehensive knowledge


Perioperative care


**Conclusion**

A pediatric patient with an elevated BMI presents a unique challenge in the day surgery setting. A 2008 study of 2,025 children undergoing general pediatric surgery revealed that approximately 15% of the patients were obese. The available evidence suggests that this population is at risk for respiratory and postoperative wound complications. Since a significant body of knowledge is currently not available about the perioperative complications of a pediatric patient with elevated BMI, future research will assist nurses and interdisciplinary teams with providing appropriate care specific for this at-risk population. We hope this paper will help with providing guidance for providers with what is currently known.

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