**INTRODUCTION**

American Society of Anesthesiology (ASA) recommends that patients complete preoperative fasting prior to surgeries requiring sedation. Preoperative fasting, also known as nil per os (NPO) is defined as no food or fluids by mouth before a procedure. Pulmonary aspiration is defined as aspirating the contents of the stomach after administration of anesthesia, during the surgical procedure, or the period immediately following the procedure. Current guidelines for elective surgery requiring sedation suggest a minimum NPO status of two hours from clear fluids and six hours for solid foods. Risks of prolonged fasting include: increased risk of electrolyte imbalances, insulin resistance, dehydration, and patient discomfort. Risks of pulmonary aspiration include pneumonia, hypoxia, death and more. Despite studies that contradict the need for prolonged fasting, surgeons still continue to recommend an NPO status greater than the current preoperative fasting guidelines of, two hours for clear liquids and six hours for food.

**PICO**

- **P** Population: Pediatric patients requiring sedation for elective procedures.
- **I** Intervention: NPO less than 6 hours
- **C** Comparison: NPO greater than 6 hours
- **O** Outcome: Aspiration during sedation

**Clinical Question:** Among patients requiring procedural sedation does an NPO status of less than 6 hours as compared to an NPO status greater than 6 hours reduce the risk of aspiration during sedation?

**METHODS**

**PRISMA 2009 Flow Diagram**

- Records identified through database searching:
  - Key terms: sedation, fasting, aspiration, NPO, pediatrics, pre-procedural
  - Limited within 5 years, clinical trials, and review articles (n=42)
- Records screened (n=38)
- Records excluded: Studies that were not related to elective procedures, studies that focused on the effect of fasting on postoperative outcomes, articles that were not studies, articles that were published prior to 2012 (n=3)
- Full-text articles assessed for eligibility (n=36)
- Full-text articles excluded: Emergency procedures or not addressing procedural sedation (n=3)
- Studies included in qualitative synthesis (n=32)

**RESULTS**

**Study 1: The Risk of shorter fasting time for pediatric deep sedation**

- **Objective:** To identify an association between various fasting time and procedural sedation and analgesia (PSA) related complications when conducted outside and operating theatre.
- **Results:** Listed in Table 1.

<table>
<thead>
<tr>
<th>P-Value</th>
<th>Confidence Interval 95%</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Airway</td>
<td>0.109</td>
<td>0.563-1.060</td>
</tr>
<tr>
<td>Major Airway</td>
<td>0.808</td>
<td>0.411-3.133</td>
</tr>
</tbody>
</table>

**Critic:** Pulmonary aspiration is a rare incidence, therefore the sample size in this study, 2,487 patients, may not be large enough to extrapolate the findings to the larger population. Specifically regarding patient's diets prior to sedation were unknown.

**Study 2: Major Adverse Events and Relationship to Nil per Os Status in Pediatric Sedation/Anesthesia Outside the Operating Room: A Report of the Pediatric Sedation Research Consortium**

- **Objective:** To investigate the link between patient procedure factors and adverse pulmonary outcomes that occur during procedural sedation.
- **Results:** There is no statistical significance between NPO status and pulmonary aspiration.

<table>
<thead>
<tr>
<th>P-Value</th>
<th>Confidence Interval 95%</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor Airway</td>
<td>0.79</td>
<td>0.08-4.08</td>
</tr>
<tr>
<td>Major Airway</td>
<td>0.88</td>
<td>0.55-1.93</td>
</tr>
</tbody>
</table>

**Critic:** Their sample size was large and diverse enough to assess the risk of pulmonary aspiration. Pulmonary aspiration was not defined. Specifically regarding patient's diets prior to sedation were unknown.

**Study 3: Low incidence of pulmonary aspiration in children allowed intake of clear fluids until called to the operating suite**

- **Objective:** To determine the incidence of pulmonary aspiration in pediatric patients undergoing general anesthesia for elective procedures with unlimited intake of clear fluids prior to the operating suite.
- **Results:** Listed in Table 3.

**Critic:** The sample size was large and had instances of pulmonary aspiration. Due to the limited research on shortered fasting times in pediatric patients, this study reviewed patients undergoing general anesthesia. The amount of liquid patients consumed prior to being called to the operating room is unknown. This study compared their results to other studies, not a control group.

**Table 3. Comparison of Studies**

<table>
<thead>
<tr>
<th>Study Type</th>
<th>Population Size</th>
<th>Age of Subjects</th>
<th>NPO &gt; 6 hours</th>
<th>Not NPO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clark et al.³</td>
<td>2,487</td>
<td>2 months to 18 years</td>
<td>1,480</td>
<td>Solids: 23,817</td>
</tr>
<tr>
<td>Beach et al.⁶</td>
<td>139,142</td>
<td>0 months - 18 years old</td>
<td>82,546</td>
<td>Non-clear: 899</td>
</tr>
<tr>
<td>Anderson et al.⁷</td>
<td>10,015</td>
<td>10 months and 23 years old</td>
<td>All patients were on a strict NPO &gt; 6 hours for solids</td>
<td></td>
</tr>
</tbody>
</table>

**CONCLUSIONS**

Clark et al.⁵ and Beach et al.⁶ concluded there was not statistically significant difference between an NPO status less than 6 hours, compared to greater than 6 hours, and the risk of aspiration in pediatric patients. Anderson et al.⁷ concluded a shortened fast for clear liquids, prior to general anesthesia, does not increase the incidence of aspiration. Research is currently insufficient to make a recommendation. Due to the rarity of aspiration, larger sample sizes are needed to adequately determine the risk during procedural sedation in pediatric patients. Future studies should also include the timing, amount, and quality of oral intake and complications that occur before, during, and after procedures requiring procedural sedation.

**ACKNOWLEDGMENTS**

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**REFERENCES**