

A Trio of Commentaries on Preoperative Fasting Guidelines

Three experts on our editorial board have been asked to present a compendium of the current status of preoperative fasting (*nil per os*—NPO: nothing by mouth) guidelines. Dr. Thelma Korpman summarizes and comments on the ASA's current practice guidelines for preoperative fasting, while Dr. Mark Singleton adds his commentary regarding the commonly used terminology “NPO after midnight,” and then Dr. Mark Zakowski completes this triad with his recommendations on oral intake in obstetric anesthesia practice.

ASA Practice Guidelines for Preoperative Fasting

By Thelma Z. Korpman, M.D., MBA

I have been in the practice of anesthesia for over 30 years and have rewritten NPO guidelines for my institution at least once for every year in practice. Usually what prompts the rewriting is the cancellation or delay of a patient who did not follow current recommendations. The affected surgeon demands that from now on *all* patients should abstain from any food or drink after midnight regardless of whether the surgery is at 8:00 a.m. or 5:00 p.m. the following day. The surgeon demands that the OR Committee review the NPO instructions and change them so he or she never has another cancellation due to the NPO status, and unfortunately there are anesthesiologists who go along with this approach. The American Society of Anesthesiologists (ASA) Guidelines, which are based on a synthesis and analysis of the current literature, expert and practitioner opinion, open forum commentary, and clinical feasibility data, are recommendations to assist the practitioner and patient in making health care decisions. They currently read:

Ingested Material	Minimal fasting (hours)
Clear liquids	2
Breast milk	4
Infant formula	6
Nonhuman milk	6
Light meal (toast and clear liquid)	6
Regular meal	8

They guarantee no specific outcome if followed. If these guidelines are not followed, then the practitioner should compare the risks and benefits of proceeding. These guidelines are written for healthy patients of all ages undergoing elective procedures.

The ASA periodically reviews its guidelines and revises them and then disseminates the new guidelines to the anesthesia community.

Commentaries on Preoperative Fasting Guidelines (cont'd)

The definition of clear liquids is water, fruit juices without pulp, carbonated beverages, clear tea and black coffee. This seems simple enough, but unless your patients are different from mine, confusion arises with black coffee and fruit juice without pulp. How patients can read this instruction and still put cream or milk in their coffee or drink orange juice with pulp is, perhaps, just another inexplicable and potentially self-harmful aspect of human behavior. Experiencing such behaviors has led me to the conclusion that patients really do not take this as seriously as we do and do not understand why we demand adherence to these guidelines. We must consider who tells the patient what the NPO orders mean and why we are asking them to follow these orders. Patients get different instructions from various sources (surgeon, scheduler, medical assistant, nurse, etc.) and the result is an occasional cancellation.

Risk of Aspiration

Published clinical evidence is insufficient to address the relationship between fasting times for clear liquids and the risk of emesis/reflux or pulmonary aspiration. We need to recognize that longer fasts are not better, that changes in schedule are not generally affected by clear liquids up to two hours before surgery, and that the current ASA guidelines do not expose us to increased liability,

It is well recognized that the risk of perioperative pulmonary aspiration of gastric contents resulting in morbidity or mortality is relatively low. Prolonged fasting (over eight hours for food *and* liquids) is not necessary and in fact leads to irritability, headache, dehydration, and hypovolemia as well as thirst. These strict NPO guidelines probably lead to the lack of compliance with preoperative fasting orders because of the discomfort experienced. The ASA guidelines have become more liberal over the years in addressing the negative effects of prolonged fasting, yet NPO after midnight has not been abolished in many institutions. Fasting for any amount of time is no guarantee that the stomach will be empty at the time of surgery, nor does it ensure that the gastric contents will be less acidic. Those of us who have practiced for a while have witnessed the regurgitation of an undigested meal in patients who have abstained from solids or liquids for eight hours and we are grateful for the fact that aspiration is a rare event. Conditions such as pain, anxiety, diabetes, gastroesophageal reflux disease (GERD), and the effect of opioids can increase the risk of pulmonary aspiration of gastric contents regardless of the number of hours the patient has been NPO. And those five conditions are seen every day in our practice.

I am sure you have heard a surgeon suggest a regional or spinal anesthetic or monitored anesthesia care (MAC) when a patient did not follow the NPO instructions. For over 30 years I have heard surgeons suggest that as long as it is not a general anesthesia it is all right not to follow the NPO guidelines.

Commentaries on Preoperative Fasting Guidelines (cont'd)

Anesthesia providers generally follow the same NPO guidelines for elective cases regardless of the type of anesthetic.

On the other hand, procedural sedation and analgesia (PSA) is being administered in the Emergency Department (ED) by the ED physicians without regard to pre-sedation fasting guidelines for either liquids or solids. The ED Clinical Practice Advisory states that there is insufficient evidence to support specific fasting requirements before PSA, regardless of depth achieved or agent administered. Propofol and ketamine are often used for PSA, so a patient might undergo a reduction of a joint dislocation in the ED in an unfasted state, receiving propofol as PSA. Were he to be taken to the operating room he would need to be fasted and/or he would have a rapid induction and possibly cricoid pressure with insertion of an endotracheal tube. Are the ASA guidelines too conservative, or are the ED guidelines not strict enough? Were a surgeon to operate in Germany, he would find anesthesiologists following liberalized recommendations that allow solid food up to six hours prior to elective surgery rather than the eight hours recommended by the ASA. How can we blame the surgeon who does not understand why we cannot do a MAC case for a patient who had a teaspoon of milk in his coffee when we are not really sure ourselves if indeed his aspiration risk is increased?

The literature is not strong in determining how many hours of NPO of solids is safe, and it is doubtful that controlled studies will be done. I suspect that eight hours NPO of solids will be the recommendation for a long time to come unless the ED physicians publish a report of their experience using their more liberal guidelines.

What if there were a way to assess gastric content and volume and thus assess perioperative aspiration risk? Anahi Perlas, M.D., and associates at the University of Toronto reported in *Anesthesiology* in 2009 on the use of bedside ultrasound to assess gastric content and volume, noting that the gastric antrum provided the most reliable information for gastric volume. Dr. Perlas suggested that bedside gastric ultrasonography can provide both gastric content and volume. More research was needed at that time because studies had been conducted only on healthy normal adults. Lionel Bouvet, M.D., and associates published in *Anesthesiology* 2011 a study of 180 patients whose antral cross-sectional area was evaluated ultrasonographically to assess solid particles and/or gastric fluid volume. A "risk stomach" was defined by the preinduction presence of solid particles and/or a gastric fluid volume greater than 0.8 ml/kg. Three of the original study patients could not have their antral area assessed because of obesity in two and significant gas in the stomach of the third. Further studies are needed to assess the usefulness of ultrasonographic measurement of the antral cross-sectional area in preventing pulmonary aspiration of gastric contents. There is also the issue of gastric pH, an important determinant of damage when aspiration occurs.

Commentaries on Preoperative Fasting Guidelines (cont'd)

The ASA Guidelines do not recommend routine preoperative use of gastrointestinal stimulants to decrease the risk of pulmonary aspiration in patients with no apparent increased risk. Furthermore the ASA does not recommend medications to block gastric acid secretion to decrease aspiration. It does not recommend antacids except for nonparticulate antacids in selected patients for purposes other than reducing the risk of pulmonary aspiration. Routine antiemetics and anticholinergics to reduce aspiration are also not recommended.

The Preoperative Assessment

There are no controlled trials addressing the impact of the preoperative assessment (e.g., history, physical examination, patient survey/questionnaire) on the frequency or severity of pulmonary aspiration of gastric contents. There are, however, studies with observational findings suggesting that predisposing conditions such as age and co-morbid disease may be associated with the risk of pulmonary aspiration. The ASA members surveyed agree that a review of the pertinent medical records, a physical examination, and patient interview should be part of the preoperative evaluation as well as verification of patient compliance with fasting guidelines. This evaluation should include assessment for GERD, other gastrointestinal disorders, potential for difficult airway management, and metabolic disorders such as diabetes mellitus that may increase the risk of regurgitation and pulmonary aspiration.

The incidence of perioperative pulmonary aspiration is very low; however, once it occurs it is associated with significant pulmonary morbidity and mortality. The ASA Practice Guidelines are recommendations to assist the practitioner in making important health care decisions leading to enhanced quality and efficiency of anesthesia care. Newer means of assessing gastric volume are being evaluated and more liberal guidelines are being tested by other groups as we strive for safety as well as patient comfort.

It Is Time to Abolish the Phrase “NPO After Midnight”

By Mark Singleton, M.D.,

The phrase quoted above is one of the most common in medicine. It is present not only in physicians' preoperative orders, but repeated by nurses, ward secretaries and dietary workers. Indeed NPO may be one of the oldest phrases in the western medical lexicon. Where did the midnight part come from and does it still serve us, and our patients? I believe it does not, and should be replaced by more meaningful, understandable, and evidenced-based instructions.

In the olden days, patients having almost every kind of elective surgery requiring general or regional anesthesia, even the most minor, were admitted to the hospital (the only kind of institution where surgery was performed) the night before the

Commentaries on Preoperative Fasting Guidelines (cont'd)

scheduled procedure. The nursing staff prepared them that evening in appropriate ways for the morning procedure and understood that the goal of “NPO after midnight” was to ensure an empty stomach. Patients were taken to the OR in the morning directly from their ward rooms. In the days of ether and before the advance of intravenous inductions, inhalation inductions often added to the risk for aspiration, and airways were not as protected as in today’s practices.

Nowadays, patients sleep at home or in a hotel the night before surgery, get up in the morning at an hour that only farmers and fisherman would find reasonable, and arrive at the hospital or surgery center several hours before their scheduled procedure. Many of these patients have been told by the surgeon’s office staff, or the surgery center pre-op phone caller: “Be sure not to eat or drink anything after midnight.” I’m sure I’m not the only anesthesiologist to discover that my 7:30 a.m. patient, who slept barely four hours, had a substantial meal at 11:45 p.m., much of which is still settled uncomfortably in their stomach. When I ask if they normally eat at that hour, the reply is something like, “No, but they told me nothing after midnight and I thought that would be my last meal for quite a while.” There may be an ominous truth to that, which of course is completely beyond the patient’s understanding. This never happened in the olden days, but that’s why we shouldn’t be living in the past, and should adopt protocols that work in today’s world.

I try to call my patients the night before surgery, which is pretty much a routine in my group’s practice, and when we get to the NPO part, they often ask something like: “So I shouldn’t eat anything after midnight?” I reply: “You should have a regular dinner at the normal time, unless your surgeon has given you other special instructions, and then don’t eat anything after that. If you are thirsty any time in the night you can have water to drink. Please don’t eat or drink anything once you get up in the morning before coming for surgery.” If they are scheduled for later than the first case, I tell them they can have small sips of water until they leave home. Most of us who have patients scheduled for surgery after 3 p.m. tell them they can have a light breakfast before 7 a.m., but there are surgeons who, when cancellations of earlier cases occur, will be upset that these patients can’t be moved to an earlier-than-scheduled operative time. You have to know how much to trust your surgical schedule and the surgeons with whom you work.

Dr. Korpman’s important article (preceding) points out how much of an influence—often unhelpful—surgeons and others have on these issues, and gives us a clear iteration of the ASA recommendations for fasting before elective anesthesia. These unfortunately become almost irrelevant if the patient hears from the surgeon’s office staff and the facility staff that they should “not eat or drink after midnight.” It’s always best for an anesthesia provider to give patients their individualized NPO instructions, another reason that we should endeavor to

communicate with our patients, at least the day prior to surgery. We have to improve the way patients receive this important information and the reasons for it. I would rather have the non-anesthesia advisors tell patients: “Don’t eat or drink anything after dinner,” and leave midnight for sleeping.

NPO Guidelines for Obstetric Patients

By Mark Zakowski, M.D.

Oral Intake During Labor

For healthy patients undergoing elective procedures, the 2011 American Society of Anesthesiologists (ASA) guidelines state that *nil per os* (NPO) should be two hours for clear liquids, six hours for a light meal, and eight hours for a fatty meal.¹ The ASA NPO guidelines from 2007 state that during labor, oral intake of modest amounts of clear liquids may be allowed for uncomplicated laboring patients.² Solid foods should be avoided in labor.² For medically complicated patients at increased risk for aspiration (e.g., morbid obesity) or when fetal heart rate tracings change (current terminology—Category II or III),^{3,4} no food or drink should be allowed.

Postpartum Tubal Ligation

A postpartum tubal ligation (PPTL) within eight hours of delivery does not increase maternal complications. However, even a woman with a pre-existing epidural needs to meet full NPO guidelines if the PPTL is elective—no solids for six to eight hours and no clear liquids for two hours.² One should consider that gastric emptying is delayed in parturients who have received opioids during labor, *and* that a labor epidural extended for a PPTL may be more likely to fail with longer post-delivery time intervals.

References

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3. Zakowski, M. “Obstetric Anesthesiology: What’s New, What’s Old and What’s Standard? How to Avoid Conflict and Achieve Good Outcomes.” *CSA Bulletin*, Volume 60, Number 3, 87–96.
4. American College of Obstetricians and Gynecologists, Practice Bulletin #116, “Management of Intrapartum Fetal Heart Rate Tracings,” November 2010.