NPO Prior to Interventional Spine Procedures

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Myth: Every patient undergoing a diagnostic or therapeutic spinal injection should be instructed to have nothing to eat or drink after midnight.

Fact: The level of planned sedation/analgesia coupled with patient risk factors, not necessarily the type of scheduled intervention, governs pre-procedural fasting recommendations.

Fasting prior to a medical procedure is an entrenched concept that arises from the anesthesia patient safety tradition. Since Mendelson's original description, over 70 years ago, there has been a presumed link between the quantity and quality of gastric contents and the risk of aspiration and death with anesthesia [1].

Guidelines

Fasting prior to induction of anesthesia mitigates the risk of aspiration pneumonia. The American Society of Anesthesiology (ASA) codified the science supporting these assumptions and provided clinical recommendations: Practice Guidelines for Preoperative Fasting [2]. The recommendations for healthy adults are the following: a light meal is acceptable 6 hours prior, and clear liquids may be consumed up to 2 hours prior to anesthesia.

There is little debate that general anesthesia depresses protective airway reflexes that normally prevent regurgitated gastric contents from entering the lungs. Unfortunately, nothing is known about the dose response effect of modern sedatives on the airway reflexes. Graded loss of protective airway reflexes with increasing depth of sedation is a theory.

The ASA recommendations for fasting "do not apply to patients who undergo procedures with no anesthesia or only local anesthesia…" The ASA recommendations do apply to "general anesthesia, regional anesthesia, or sedation/analgesia (i.e. monitored anesthesia care)."

The Evidence

On the one hand, anesthesia safety initiatives have reduced anesthesia-related deaths by over 90% in the past 50 years. On the other hand, very little of that improvement can be directly attributable to the *nil per os* (NPO) recommendations [3]. The ASA guidelines state, "Published clinical evidence is insufficient to address the relationship between fasting times for clear liquids and solids and the risk of emesis/reflux of pulmonary aspiration." The ASA NPO guideline, therefore, is a consensus opinion and is not evidence-based. The evidence supporting fasting prior to simpler and less intrusive procedural sedation is even less persuasive.

Evidence suggests that anesthesia-related aspiration death rates are quite low. A recent audit reports that the incidence of aspiration with general anesthesia may be as low as 1/350,000 [4]. Aspiration is rare and may occur spontaneously. In a 9-year period, the Mayo Clinic reported 57 consecutive aspiration-related deaths, none of which were NPO/anesthesia-related [5]. The main risk factors for aspiration are the following: advanced age, neurological disorders, esophageal dysfunction, intra-abdominal pathology, overdose, alcoholism, and significant underlying health problems with concomitant use of anxiolytics.

No medical literature has been identified that links any interventional spine procedure with aspiration. Furthermore, no literature was identified that spoke to the issue of requiring patients to be NPO prior to interventional spine procedures performed under local anesthesia. Many reports discuss spine intervention risks during the course of various levels of sedation, but invariably omit any details concerning the fasting protocols [6-13]. A survey from 2005 noted that 74% of interventional pain management physicians had adopted some sort of NPO policy [14]. Only one study specifically evaluated the "risks" of

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allowing patients to eat and drink in close proximity to moderate IV sedation prior to an interventional spine procedure (n=11,856). The authors concluded that nausea and vomiting was very rare and aspiration non-existent; therefore, preoperative fasting was unnecessary [15].

Evidence from other medical fields also suggest low risk of sedation related aspiration, and is reflected by practice patterns and guidelines from other societies. In a study of about 140,000 pediatric patients undergoing sedation for procedures outside of the operating room, there were no differences in adverse events between the group who met ASA NPO guidelines versus the group who did not [16]. Patients in a children's hospital ED (n= 1,014) who had sedation were no more likely to experience an adverse event if they were fasting or not [17]. The American College of Emergency Physicians (ACEP) guidelines on procedural sedation and analgesia state, "Recent food intake is not a contraindication for administering procedural sedation and analgesia…" [18]. A recent survey of oral and maxillofacial surgeons detailed preferences to exceed the ASA fasting guidelines [19]. However, in a survey of dentists in general practice, 69% did not recommend any fasting prior to conscious sedation [20]. Failing to follow fasting guidelines is the most common cause of procedure delay and cancelation [21, 22].

The Risks of Fasting

Fasting prior to a medical procedure is not benign and may prompt the following: alteration in glucose metabolism, hunger, thirst, irritability, headaches, dehydration, low blood volume, deleterious cardiovascular effects, anxiety, and other endocrine and metabolic stress responses. Fasting may have deleterious effects on patient well-being and impede recovery [23-25]. A third of patients may fail to take important medications as a consequence of misunderstanding the NPO instructions. A majority of patients report adverse symptoms attributable to fasting [26].

Summary and Recommendations

Advising patients to fast prior to an elective spinal intervention has risks and benefits. There are measurable adverse emotional and physiological effects to fasting, but to date, no recognized benefits for non-sedated patients. Restrictions on eating or drinking prior to spinal interventions performed with local anesthesia are unwarranted. There is no clear evidence that NPO status is necessary for light sedation. Deep or moderate sedation for spinal interventions is rarely indicated, and would trigger full compliance with the ASA fasting guidelines. Depending upon the location of service, many spine interventionalists may be required to follow institutional rules that reflect the traditional ASA NPO Guidelines for all cases regardless of the level of planned sedation.

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