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To Eat or Not to Eat? A Review of Current Practices Regarding Food in Labor

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Abstract

Purpose of Review Significant changes in the perception of women's birth experience and increased importance of maternal satisfaction have questioned fasting policies in labor. This review presents current guidelines and developments regarding food in labor, highlighting the importance of finding a safe compromise between liberal and restrictive policies.

Recent Findings Aspiration of gastric contents in the pregnant population is exceedingly rare, despite liberal food policies. Little evidence suggests epidural analgesia affects the risk for aspiration. No evidence supports benefits of eating for obstetric outcomes; however, eating increases maternal satisfaction. Gastric ultrasound may be a useful tool for evaluating a woman's stomach content and aspiration risk.

Summary Our interpretation of the literature supports that women at low risk for aspiration, peripartum surgery, or need for general anesthesia should be permitted light food during labor. It may be advisable to recommend that women at high risk for peripartum surgery avoid food and restrict consumption to carbohydrate-rich drinks. Gastric ultrasound may be useful to tailor patient-specific recommendations in the delivery ward.

Keywords Aspiration · Eating and fasting guidelines · Gastric ultrasound · Labor · Maternal satisfaction

Introduction

Eating in labor has been discouraged since Mendelson's work on laboring women in 1944 [1][2]. Yet increasing safety of general anesthesia for cesarean delivery including neuraxial anesthesia and aspiration prophylaxis has questioned these practices. Thus, eating policies during labor have been challenged for both low- and high-risk laboring patients [3][4][5]. In this review, we will discuss current policies and recommendations, the benefits and risks of eating in labor, the potential effect of epidural analgesia on eating policies, and the use of gastric ultrasound for developing patient-tailored guidelines. Our review does not discuss fasting guidelines prior to elective cesarean delivery (CD) or enhanced recovery for CD (ERACS) protocols; rather, it will focus on oral intake policies during vaginal delivery.

Current Policies and Practices

There is no consensus regarding oral intake guidelines in labor. While some societies, such as the American College of Gynecology (ACOG) and the American Society of Anesthesiologists (ASA) [6][7], advocate avoiding eating in labor, others recommend "non-interference with a woman's desire to eat" (World Health Organization) [8]. In practice, labor and delivery units (L&D) vary greatly in their eating policies. In 2006, 47% of L&D in England allowed some form of oral intake in labor [9] and 78% of L&D in Israel in 2021 allowed food in labor [10••]. In the Netherlands in 1991, 75% of centers allowed women to eat [11]. In Canada, a 2016 survey [12] found 38% of centers allowed solid food intake during labor, but only 7% allowed eating during active labor with epidural analgesia. Though more recent reviews examining current practices are lacking, cultural differences between countries are evident. In addition, practices between L&D vary greatly as well on a national

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level. A recent review investigating eating policies in all Israeli L&D showed that oral intake practices and opinions varied between L&D and even within a given center between disciplines (anesthesiologists, midwives, and obstetricians) [10••][13]. In addition, 48% stated a lack of clear institutional guidelines, explaining at least partially this diversity in practices. Even when clear policies do exist, it seems they are not volunteered to the patient unless she explicitly asks about eating in labor [14••].

Potential Risks of Eating in Labor

The main potential risk associated with eating in labor is aspiration pneumonitis in the case of emergency CD performed under general anesthesia. Fear of aspiration is based on Mendelson's research from 1944 [1]. At the time, anesthesia for laboring women was administered via face mask, leaving the airway unprotected. Out of the 44,000 labors, 66 cases of aspiration were described. Two cases resulted in maternal death due to the aspiration of solid food leading to asphyxiation. The other 64 cases of aspiration pneumonitis had a complete recovery. Laboring women are considered at increased risk for aspiration due to low esophageal sphincter tone and reduced gastric emptying [15][16]. For this reason, induction of anesthesia for peripartum surgery is now usually performed using a rapid-sequence induction technique. In addition, the higher incidence of difficult airway in pregnant women, and specifically during active labor [17][18][19], increase the risk of airway complications, including aspiration. Under the current era of increased safety of anesthesia, reports examining causes for maternal morbidity and mortality show the risk of aspiration is exceedingly rare during delivery, and the risk of death due to aspiration even more so. An investigation of maternal deaths between 2003 and 2005 in the UK [20] described six cases of anesthesia-related deaths out of over 2 million labors and four anesthesia-related deaths between 2006 and 2008 [21•]. None of these were due to aspiration. Multiple studies have investigated the rate of maternal anesthetic complications in the USA over the last decades. Out of the 4097 pregnancy-related deaths between 1979 and 1990, 129 were anesthesia-related, 29 (23%) of which were due to aspiration [22]. A study examining serious complications during obstetric anesthesia between 2004 and 2009 in 30 institutions [23] published data from 257,000 anesthetics (5000 general anesthetics). The rate of serious complications was 1:3000, and no cases of aspiration were reported. Between 1998 and 2011, 7% of 4843 maternal cardiac arrests were potentially due to aspiration, with an 83% survival rate. The rate of aspiration has not increased over the years despite an increasingly liberal approach to eating in labor, and countries with more liberal policies do not have higher rates of aspiration, suggesting little correlation between eating in labor and maternal aspiration-related morbidity.

Potential Benefits of Eating in Labor

Pregnant women are at risk for ketogenesis when fasted [24][25], and eating may help meet the metabolic demands of the work of labor. Randomized controlled trials comparing women who ate a light meal during labor to women who drank water only indeed showed significantly higher ketone bodies in the fasted group [26], though without evidence of other detrimental effects on maternal and neonatal outcomes such as Apgar scores or rates of instrumental and cesarean deliveries [27•][28]. Another study found labors to be 16 minutes shorter when permissive eating policies were in place, with no effect on other neonatal and maternal outcomes [29•]. Therefore, evidence supporting the purely physiological benefits to eating in labor is lacking. However, eating in labor improves maternal satisfaction [14••], and maternal wellbeing and feeling of control over the laboring experience may be considered good enough reason to allow more liberal policies. An additional benefit to allowing food in labor or at least an isotonic drink is to avoid the consumption of water only during labor. Indeed, a recent study has found the risk of symptomatic hyponatremia is increased in laboring women. The use of exogenous oxytocin and drinking large quantities of free water may exacerbate this condition, and the results of the UK Obstetric Surveillance System (UKOSS) study on peripartum hyponatremia are anticipated soon.

Do Laboring Women Want to Eat?

While the opinions of laboring women are an important factor when considering eating policies, few studies have investigated whether women wish to eat during labor. One study following laboring women in an L&D where the women were allowed to eat freely [30•] found that when asked what the women had eaten during a two hour period, 48% had eaten solid food. The types of food eaten varied from light food such as fruits or energy bars to heavy meals, such as chicken nuggets or pizza. Another study in a center that restricted oral intake to limited volumes of water only found that 33% would have desired no limits on water volumes, 24% would have liked a sweet drink, and 12% solid food [14••]. These data suggest women indeed desire more liberal policies regarding food in labor.

High-Risk vs Low-Risk Women

Though preoperative fasting guidelines are identical for all patients, a one-size-fits-all approach to oral intake guidelines in labor may not be optimal. Standardized risk stratification should be performed in order to identify high-risk women and tailor recommendations to the specific patient. "High risk" includes women who are high risk for CD due to obstetric factors, women who are high risk for general anesthesia in the case of emergent CD (i.e., women with a contraindication to neuraxial analgesia), and women who are at increased risk for aspiration due to underlying comorbidities. We suggest a list of potential "high-risk" women who should be advised to avoid solid food in labor in Table 1 [31]. While certain of these factors make identification of increased risk possible as soon as the women arrive to the delivery room (i.e., increased body mass index), occurrence of other factors may be delayed (i.e., protracted labor) and a low-risk woman may progress to high risk during her labor. For this reason, we recommend re-assessment of women during labor (see section below for further details).

Carbohydrate-Rich Drinks

Carbohydrate-rich drinks (such as "sports drinks" or clear apple juice) are a potential alternative to eating solid food in labor while increasing maternal satisfaction and avoiding potential ketogenesis [32][33]. Women who were randomized to drinking an isotonic "sports drink" in labor were found to have lower ketone bodies with no difference in gastric volumes as measured per ultrasonography [33]. Such drinks are rapidly emptied from the stomach similarly to other clear fluids and thus potentially carry a lower risk of aspiration when compared to solid food. Though we believe low-risk women should be allowed to eat light solid food in labor, this is an appropriate alternative for high-risk women.

Effect of Epidural Analgesia

Pain may reduce gastric emptying [34]; thus, adequate epidural analgesia may improve gastric motility and potentially reduce the need for general anesthesia in the case of an emergent CD. On the other hand, opiates (often added to the epidural solution) are known to slow gastric emptying, and past studies based on paracetamol absorption tests suggest high doses of epidural opiates (> 100 mcg of fentanyl) may have a similar effect [35][36]. A recent randomized controlled study compared low and high-dose epidural fentanyl on gastric content using gastric ultrasound [37]. Women who had been randomized to high dose epidural fentanyl were found to have similar gastric volumes to those who had received lower doses. Certain centers have differential policies for oral intake in labor before and after epidural analgesia is in place [12], but most do not [10••], and evidence suggests epidural analgesia should not be a factor when considering the appropriate eating policy to apply to a patient.

Use of Gastric Ultrasound

Gastric ultrasonography to estimate gastric volume and content is a useful tool to assess risk of aspiration [37][38] and has been validated in pregnant and laboring women as well [39][40][41]. When encountering a potentially high-risk patient or when the clinician is unsure if eating should be allowed for a specific patient, gastric ultrasonography can aid in the decision-making process. This tool may also be used before emergent CD to assist in choice of anesthetic. A cutoff of 381 mm^2 measured in the supine semi-recumbent position or right lateral decubitus has been suggested as the cutoff for a "full stomach" in this population [42][43][30•] and may suggest an increased risk for aspiration. Alternatively, qualitative assessment alone may be performed to evaluate for presence of clear liquids or solids in the gastric antrum [44].

Table 1 Suggested list of high risk women who should avoid food in labor

High risk for CD	Trial of delivery after previous CD Non-reassuring fetal monitor Placenta previa/accreta Multiple gestation Protracted labor Pre-eclampsia
High risk for general anesthesia	Hemodynamic instability Thrombocytopenia/coagulopathy Other contraindications to neuraxial Anesthesia
High risk for aspiration	Severe gastro-esophageal reflux, hiatal hernia Neurological diseases (e.g. gastroparesis, multiple sclerosis) Suspected difficult airway BMI > 40

Implementation of Protocols

When deciding to apply differential protocols according to risk stratification, it is crucial to establish who will be responsible for (a) their implementation and (b) the identification of high-risk women. Policies should be decided on a departmental level by a multidisciplinary team of anesthesiologists, obstetricians, and midwives, and staff working in the L&D should be informed of these clearly. Logistically, it likely falls to the midwife or labor nurse to update women regarding the L&D's policy, as the primary caregiver during labor. This information should be volunteered to all laboring women, regardless of whether they inquire about eating. Identification of high-risk women poses a greater challenge, and this is true for risk stratification for obstetric management in general, not only for oral intake guidelines. Thus, risk stratification indices such as the Bateman Index [45] have been developed to identify obstetric patients at increased risk for peripartum mortality and morbidity. Similarly, we suggest the use of a standardized checklist by the midwife that will assist in the initial identification of women who are at increased risk for CD, increased risk for general anesthesia, or increased risk for aspiration in general. However, as is true for all management in the L&D, both high and low-risk women should be reassessed throughout their labor by the anesthesiologist whenever there is an interaction with the patient (e.g., epidural placement or re-evaluation), and by the obstetrician, who should immediately communicate with the anesthesiologist should a woman now be deemed at increased risk for CD. Eating recommendations should then be modified accordingly.

Conclusions

Recognizing the importance of a woman's wishes, well-being, and autonomy is paramount in modern obstetric anesthesia, and this positive trend is evident in all the aspects of laboring women's care. Eating in labor may significantly improve a woman's birthing experience, and restrictive policies may lead to feelings of incapacity, in addition to the discomfort and weakness that may be associated with hunger. Though aspiration is a potential risk, its occurrence is sufficiently rare to allow at the very least certain women to eat in labor. Risk stratification and gastric ultrasonography may help identify high-risk women. In our opinion, low-risk women should be allowed light food throughout their labor, and high-risk women should be allowed clear liquids only while encouraging the consumption of carbohydrate-rich drinks. We believe heavy meals (i.e., fried foods, meat) should be avoided during active labor. A critical aspect of implementing such clear differential policies is adherence by all staff caring for laboring women in a given L&D. We hope to see a rise in such policies in the future, leaving behind outdated recommendations that do not take into consideration women's wellbeing and preferences.

Declarations

Conflict of Interest The authors do not have existing conflicts of interest.

Human and Animal Rights and Informed Consent.

This article does not contain any studies with human or animal subjects performed by any of the authors.

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