

Preoperative fasting: Assessment of the practices of Lebanese Anesthesiologists

ABSTRACT

Background: Although new guidelines developed by the American Society of Anesthesiologists (ASA) recommend a liberalized preoperative nutrition, authorized clinical practice guidelines or recommendations have not yet been proposed by the Lebanese Society of Anesthesia (LSA).

Objective: The purpose of this study was to examine Lebanese anesthesiologists' preoperative fasting routines and determine their knowledge and acceptance of the ASA recommendations, their attitude toward liberalized fasting, and the factors favoring their nonadherence to the new recommendations.

Materials and Methods: This study was conducted in university hospitals, affiliated hospitals, and nonuniversity hospitals located in different regions of Lebanon. The survey was approved by the local ethics committee. A written questionnaire was emailed to all anesthesiologist members of the LSA which was completed anonymously.

Results: Out of the 294 anesthesiologists registered in the LSA and who read the email, 118 (40.1%) completed the questionnaire. Of respondents, 90% are aware of the latest ASA practice guidelines for preoperative fasting, and 78.7% claim to apply them in their practices; however, 75% of respondents still require adult patients to stop eating after midnight, and only 45% allow them to drink clear fluids up to 2 h preoperatively. One of the main reasons for not complying with the ASA guidelines was "to allow flexibility for changes in the operating schedule."

Conclusion: A long preoperative fasting period is still the common practice for Lebanese anesthesiologists. National guideline for preoperative fasting as liberal as that recommended by the ASA should be considered.

Key words: Preoperative fasting; recommendations; survey

Introduction

For many decades, anesthesiologists used to apply routing fasting (12 h) or *nil per os* (NPO) after midnight before elective surgery to reduce gastric volume and acidity, in order to decrease the risk of aspiration pneumonia and Mendelson syndrome during anesthesia.^[1] However, enhanced recovery after surgery protocols, as well as

new guidelines developed by the American Society of Anesthesiologists (ASA)^[2] and by the European Society of Anesthesiology (ESA)^[3] recommend a liberalized preoperative nutrition that was associated, according to many studies,^[4-6] with better clinical outcomes without increasing risks.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Dagher C, Tohme J, Bou Chebl R, Chalhoub V, Richa F, Abou Zeid H, *et al.* Preoperative fasting: Assessment of the practices of Lebanese Anesthesiologists. Saudi J Anaesth 2019;13:184-90.

Access this article online	
Website: www.saudija.org	Quick Response Code 
DOI: 10.4103/sja.SJA_720_18	

CHRISTINE DAGHER, JOANNA TOHME, RITA BOU CHEBL, VIVIANE CHALHOUB, FRED A RICHA, HICHAM ABOU ZEID, SAMIA MADI-JEBARA

Department of Anesthesiology and Critical Care Unit, Hotel Dieu de France Hospital, Saint Joseph University, Beirut, Lebanon

Address for correspondence: Dr. Christine Dagher, Department of Anesthesiology and Critical Care Unit, Hotel Dieu de France Hospital, Saint Joseph University, Beirut, Lebanon.
E-mail: chdagher@hotmail.com

Despite the implementation in many institutions of these new fasting routines of 2 h for clear fluids and 6 h for solid food before elective surgery, many studies conducted all over the world suggest that prolonged preoperative fasting continues regardless of the time of day at which surgery is scheduled.^[7-10]

To date, authorized clinical practice guidelines or recommendations have not yet been proposed by the Lebanese Society of Anesthesia (LSA) or by the Ministry of Public Health. Therefore, a nationwide survey was conducted in Lebanon to examine our anesthesiologists' practices concerning preoperative fasting for adult and pediatric patients undergoing elective surgery. We also analyzed their knowledge of the new guidelines and recommendations, their attitude toward liberalized fasting, and the factors favoring their non-adherence to the new recommendations.

Methods

The survey was approved by the Ethics Committee of Hôtel Dieu de France Hospital. A written questionnaire was sent by email, between March and June 2018, to all anesthesiologist members of the LSA who completed the questionnaire anonymously.

The details of the questionnaire are described in the Appendix. Its purpose was to examine Lebanese anesthesiologists' preoperative fasting routines and determine their knowledge and acceptance of the ASA recommendations. The questionnaire was as follows:

- Part I (Questions 1–7): Demographics and anesthesiologists' background
- Part II (Questions 8–10): Knowledge and acceptance of the ASA recommendations
- Part III (Questions 11–15): Instructions about fasting and number of cases with documented aspiration
- Part IV (Questions 16–21): Duration of preoperative fasting for solids, fluids, smoking, and gum chewing for adult patients as well as solid, fluid, breast milk, infant formulas, and pacifiers for pediatric patients, undergoing elective surgery.

Results

Out of 294 anesthesiologists who are registered in the LSA and who read the email, 118 (40.1%) completed the questionnaire; 71.5% of the anesthesiologists worked in university hospitals or affiliated hospitals. Most of the respondents (90%) were aware of the latest ASA practice guidelines for preoperative fasting, and 78.7% have claimed

to apply them in their practices. For those who did not comply with the ASA guidelines, the most frequent practice concerning preoperative fasting was “fasting since midnight.” The reasons for not complying with the ASA guidelines are listed in Table 1.

Preoperative fasting instructions were given by anesthesiologists in 84.7% of the cases. For the rest, they were either given by the nurse (7.2%), the surgeon (6.1%), or by both the anesthesiologist and the surgeon (2%). These instructions were given orally in 71.4% of the cases while written instructions were given in the remaining 28.6% of the cases.

A total of 35 cases of aspiration per year were reported among respondents and the incidence of aspiration was estimated at 3.9/10,000.

When asked about permitted clear fluids that are not contraindicated 2–4 h preoperatively, the most frequent responses were: “noncarbonated water” (35.8%), “juice without pulp” (24.8%), “coffee or black tea without cream or milk” (12.4%), and “carbohydrate-rich drinks, sport drinks” (2.9%). However, 21.2% responded that no fluids should be permitted at all. Moreover, 54.1% of respondents limit the amount of fluid intake before surgery, and the answers to the open question “maximal amount of milliliters (ml) allowed” varied from 0 to 400 ml, while some considered the answer to be “5 ml/kg” or “the lowest possible.”

The duration of preoperative fasting periods for adult and pediatric patients are resumed in Tables 2 and 3, respectively. Adults had markedly longer preoperative fasting hours compared to pediatric patients. Concerning solid food, almost 80 and 60% of respondents were applying longer duration of restriction than was recommended in the ASA

Table 1: Reasons for not complying with the ASA guidelines concerning the minimum preoperative fasting period

Reason	Percentage
Allow flexibility for changes in the operating schedule	32.7
Doubt about the clinical applicability of the ASA guidelines in the Lebanese practice	19.2
Fear of the possible increased risk of pulmonary aspiration	11.6
Frequent use of laryngeal mask	11.4
No reason	7.7
I.V. fluid administration can compensate for the fasting period	3.8
No advantages for patients	3.8
No advantages for anesthesiologists	3.8
No advantages for the hospital	3.8
Other: Difficulty to change the practice of older anesthesiologists	2

Respondents can check all that apply

Table 2: Preoperative fasting hours for adult patients

	Until midnight	2 h	4 h	6 h	8 h	12 h	24 h	No definite standard
Solid food	75.5%			19.5%	3%	2%		
Clear fluids	36.7%	44.9%	11.2%	4.1%				3.1%
Smoking [§]	46%	5.2%		3%			13.3%	23.5%
Chewing gum	54.1%	9.2%	3.1%	5.1%	1%			27.5%

Bold: Represent the higher percentage rate in each category. [§]For 9% of respondents smoking should be stopped at the consultation of anesthesia

Table 3: Preoperative fasting hours for pediatric patients

	Until midnight	2 h	4 h	6 h	8 h	No definite standard
Solid food	45.4%	1%	6.1%	42.5%	4%	1%
Clear fluids	16.3%	62.2%	16.4%	2%		3.1%
Breast milk	11.2%	8.2%	70.4%	7.1%		3.1%
Infant formula	23.5%	3.1%	19.3%	48%	2%	4.1%
Pacifier	7.1%	4.1%		2%		86.7%
Pacifier soaked in sugar water	11.2%	13.2%	4.1%	2%		69.4%

Bold: Represent the higher percentage rate in each category

guidelines for adult and pediatric patients, respectively. As for clear fluids, 50 and 40% of respondents were applying longer duration of restriction than was recommended in the ASA guidelines for adult and pediatric patients, respectively.

When it comes to smoking and gum chewing, respondents reported a wide range of practice. They most frequently recommended abstinence after midnight or did not have any determined policy [Table 2]. Regarding circumstances that might force respondents to adopt traditional NPO after midnight routines, the most frequent responses were “all patients” (18.5%), “patients with hernia or upper GI obstruction” (10.3%), “obese patients” (10.3%), “bowel obstruction” (9.6%), “incomplete bowel obstruction” (9.3%), and “pregnant women” (9.3%).

Discussion

Even though preoperative fasting policies have already been established in most developed countries,^[2,3,8] however, this is the first nationwide survey conducted in Lebanon to evaluate the common practice of anesthesiologists concerning the preoperative fasting period. With a response rate of 40.1%, comparable to the ones reported in other national surveys,^[10-13] our results can be extrapolated to represent the current practice in Lebanon regarding preoperative fasting periods for adult and pediatric patients.

This study reveals that even though 90% of respondents are aware of the latest ASA practice guidelines for preoperative fasting, and 78.7% claim to apply them in their practices, however, 75% of respondents still require adult patients to stop eating after midnight, and only 45% allow them to drink clear fluids up to 2 h preoperatively. One of the main

reasons for not complying with the ASA guidelines was “to allow flexibility for changes in the operating schedule,” however, a study published by Murphy *et al.*^[14] analyzed the effects of liberalized preoperative fasting policy on operating room utilization and concluded that there was no increase in cancellations or delays of surgical procedures due to inappropriate oral intake.

The overall incidence of aspiration reported in this study was 3.9/10,000, in the range of those reported by other studies [0.6 – 4.7/10,000].^[8,10,13,15] Even though most of our respondents did not seem to comply with a liberalized preoperative fasting policy, however, many randomized controlled trials have shown that the volume and/or the pH of patients’ gastric contents did not differ significantly whether patients were permitted a standard vs a shortened fast.^[8,16]

Our results show that the duration of preoperative fasting is not only prolonged compared to the latest ASA guidelines but also the longest among other published surveys.^[8,10,12] This proves that despite the existence of a good guideline, awareness about it does not always guarantee its application. It may be the lack of official Lebanese recommendations at the time of this survey that could explain Lebanese anesthesiologists’ reluctance toward application of the latest ASA fasting guidelines. Therefore, it is important to publish national guidelines in order to implement evidence-based practice in Lebanon.

Among fluids that are not contraindicated until 2 h preoperatively, only 2.9% of the respondents permitted carbohydrate-rich drinks. However, the latest studies have shown that carbohydrate beverages given preoperatively have the benefit of decreasing the catabolic state associated

with starvation^[17] and decreasing gastric volume in obese patients when compared with an overnight fast.^[18] Moreover, there was no occurrence of pulmonary complications with preoperative carbohydrate beverage treatment.^[19]

When it comes to smoking and chewing gum, respondents reported a wide range of practice and most of them recommended abstinence after midnight. In fact, the latest ESA guidelines^[3] state that “patients should not have their operation cancelled or delayed just because they are chewing gum, sucking a boiled sweet or smoking immediately prior to induction of anesthesia.” This conclusion concerning gum chewing is based on three (partly) randomized studies concerning the intake of chewing gum during the perioperative fasting period.^[20-22]

This study has some limitations. First, our response rate of 51.7% is <70%, therefore we cannot completely exclude certain nonresponse bias. Second, when it comes to aspiration survey, all reports were retrospective and totally dependent on the memory of the respondent, which might be different for each of the respondents. Moreover, no definition was provided regarding aspiration, hence its diagnosis was made by each respondent based on clinical factors.

Conclusion

A long preoperative fasting period is still the common practice for Lebanese anesthesiologists. The LSA along with the Ministry of Public Health should consider establishing a Lebanese National Guideline for preoperative fasting as liberal as that recommended by the ASA, given that a national consensus had a significant impact on liberalizing the fasting policy. Finally, an awareness campaign among surgeons about preoperative fasting may also be helpful to apply the latest ASA guidelines.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Mendelson CL. The aspiration of stomach contents into the lungs during obstetric anesthesia. *Am J Obstet Gynecol* 1946;52:191-205.
- Practice Guidelines for Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration: Application to Healthy Patients Undergoing Elective Procedures: An Updated Report by the American Society of Anesthesiologists Task Force on Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration. *Anesthesiology* 2017;126:376-93.
- Smith I, Kranke P, Murat I, Smith A, O’Sullivan G, Søreide E, *et al.* Perioperative fasting in adults and children: Guidelines from the European Society of Anaesthesiology. *Eur J Anaesthesiol* 2011;28:556-69.
- Bopp C, Hofer S, Klein A, Weigand MA, Martin E, Gust R. A liberal preoperative fasting regimen improves patient comfort and satisfaction with anesthesia care in day-stay minor surgery. *Minerva Anestesiol* 2011;77:680-6.
- Yuill KA, Richardson RA, Davidson HI, Garden OJ, Parks RW. The administration of an oral carbohydrate-containing fluid prior to major elective upper-gastrointestinal surgery preserves skeletal muscle mass postoperatively – A randomised clinical trial. *Clin Nutr* 2005;24:32-7.
- Breuer JP, von Dossow V, von Heymann C, Griesbach M, von Schickfus M, Mackh E, *et al.* Preoperative oral carbohydrate administration to ASA III-IV patients undergoing elective cardiac surgery. *Anesth Analg* 2006;103:1099-108.
- Crenshaw JT, Winslow EH. Preoperative fasting: Old habits die hard. *Am J Nurs* 2002;102:36-44; quiz 45.
- Breuer JP, Bosse G, Seifert S, Prochnow L, Martin J, Schleppers A, *et al.* Pre-operative fasting: A nationwide survey of German anaesthesia departments. *Acta Anaesthesiol Scand* 2010;54:313-20.
- Bilehjani E, Fakhari S, Yavari S, Panahi JR, Afhami M, Nagipour B, *et al.* Adjustment of Preoperative Fasting Guidelines for Adult Patients Undergoing Elective Surgery. *Open J Intern Med* 2015;05:115-8.
- Shime N, Ono A, Chihara E, Tanaka Y. Current practice of preoperative fasting: A nationwide survey in Japanese anesthesia-teaching hospitals. *J Anesth* 2005;19:187-92.
- Pandit SK, Loberg KW, Pandit UA. Toast and tea before elective surgery? A national survey on current practice. *Anesth Analg* 2000;90:1348-51.
- Green CR, Pandit SK, Schork MA. Preoperative fasting time: Is the traditional policy changing? Results of a national survey. *Anesth Analg* 1996;83:123-8.
- Fasting S, Søreide E, Raeder JC. Changing preoperative fasting policies. Impact of a national consensus. *Acta Anaesthesiol Scand* 1998;42:1188-91.
- Murphy GS, Ault ML, Wong HY, Szokol JW. The effect of a new NPO policy on operating room utilization. *J Clin Anesth* 2000;12:48-51.
- Warner MA, Warner ME, Weber JG. Clinical significance of pulmonary aspiration during the perioperative period. *Anesthesiology* 1993;78:56-62.
- Brady M, Kinn S, Stuart P. Preoperative fasting for adults to prevent perioperative complications. *Cochrane Database Syst Rev* 2003;(4):CD004423.
- Bilku DK, Dennison AR, Hall TC, Metcalfe MS, Garcea G. Role of preoperative carbohydrate loading: A systematic review. *Ann R Coll Surg Engl* 2014;96:15-22.
- Shiraishi T, Kurosaki D, Nakamura M, Yazaki T, Kobinata S, Seki Y, *et al.* Gastric fluid volume change after oral rehydration solution intake in morbidly obese and normal controls: A magnetic resonance imaging-based analysis. *Anesth Analg* 2017;124:1174-8.
- Awad S, Varadhan KK, Ljungqvist O, Lobo DN. A meta-analysis of randomised controlled trials on preoperative oral carbohydrate treatment in elective surgery. *Clin Nutr* 2013;32:34-44.
- Dubin SA, Jense HG, McCranie JM, Zubar V. Sugarless gum chewing before surgery does not increase gastric fluid volume or acidity. *Can J Anaesth J Can Anesth* 1994;41:603-6.
- Schoenfelder RC, Ponnamma CM, Freyle D, Wang SM, Kain ZN. Residual gastric fluid volume and chewing gum before surgery. *Anesth Analg* 2006;102:415-7.
- Søreide E, Holst-Larsen H, Veel T, Steen PA. The effects of chewing gum on gastric content prior to induction of general anesthesia. *Anesth Analg* 1995;80:985-9.

Appendix

1. How old are you?
 - <30 years old
 - 30–40 years old
 - 40–50 years old
 - 50–60 years old
 - >60 years old
2. How many years of experience do you have?
 - <5 years
 - 5–10 years
 - 10–15 years
 - 15–20 years
 - >20 years
3. In which region do you work?
 - Beirut
 - Mount-Lebanon
 - North
 - South
 - Beqaa
4. In which type of hospital(s) or institution(s) are you employed?
 - Hospital affiliated to a university
 - University hospital
 - Nonuniversity hospital
5. In which university have you done your anesthesia specialty?
 - AUB (American University of Beirut)
 - LAU (Lebanese American University)
 - UL (Université Libanaise)
 - UOB (University of Balamand)
 - USEK (Université Saint Esprit de Kaslik)
 - USJ (Université Saint-Joseph)
 - AOU (Arab Open University)
 - Other: specify ...
 - Outside Lebanon: specify ...
6. Have you done internships in other countries after obtaining your anesthesiologist diploma?
 - Yes
 - No
7. If yes, where?
 - Europe
 - USA
 - Canada
8. Are you aware of the latest practice guidelines for preoperative fasting from the ASA (American Society of Anesthesiologists)?
 - Yes
 - No
9. If yes, do you use it in your practice?
 - Yes
 - No
10. If not, why? (What are the cons against implementing the new recommendations?)
 - No reason
 - No advantages for the hospital
 - I.V. fluid administration can compensate for the fasting period

- No advantages for anesthesiologists
 - No advantages for patients
 - To allow flexibility for changes in the operating schedule
 - Fear of the possible increased risk of pulmonary aspiration
 - Doubt about the clinical applicability of the ASA guidelines in the Lebanese practice
 - Frequent use of laryngeal mask
 - Other:...
11. How many general anesthesia cases do you perform per month?
- <5
 - 5–15
 - 15–30
 - 30–50
 - 50–70
 - >70
12. How many pediatric anesthesia cases do you perform per month?
- <5
 - 5–10
 - 10–20
 - 20–30
 - >30
13. How many cases of aspiration under general anesthesia were documented in your institution in 2017?
Specify:...
14. Who gives the preoperative fasting instructions to the patient?
- Anesthesiologist
 - Surgeon
 - Nurse
 - Secretary
 - Other: specify ...
15. How are the preoperative fasting instructions given?
- Written
 - Verbally
16. What kind of clear fluids do you recommend for ASA I or II patients without contraindications 2–4 hours before the operation?
- No fluids at all
 - Carbohydrate-rich drinks, sport drinks
 - Juice without pulp
 - Coffee or black tea without cream or milk
 - Soft drinks
 - Noncarbonated water
 - Alcohol
 - Other:...
17. Do you limit the amount of fluids for your patients before an operation?
- Yes
 - No
18. If yes, for what maximal amount of ml?
...
19. Before an operation, how long are ASA I and II adults patients allowed to:
- a. Eat:
- Until midnight
 - No definite standard
 - Other:... hours

- b. Smoke:
 - Until midnight
 - No definite standard
 - Other:... hours
 - c. Drink clear fluids:
 - Until midnight
 - No definite standard
 - Other:... hours
 - d. To have a chewing gum:
 - Until midnight
 - No definite standard
 - Other:... hours
20. Before an operation, how long are ASA I and II pediatrics patients allowed to:
- a. Eat:
 - Until midnight
 - No definite standard
 - Other:... hours
 - b. Breast milk:
 - Until midnight
 - No definite standard
 - Other:... hours
 - c. Infant formula:
 - Until midnight
 - No definite standard
 - Other:... hours
 - d. Pacifier:
 - Until midnight
 - No definite standard
 - Other:... hours
 - e. Pacifier soaked in sugar water:
 - Until midnight
 - No definite standard
 - Other:... hours
 - f. Clear liquids:
 - Until midnight
 - No definite standard
 - Other:... hours
21. Under which circumstances do you keep the practice of NPO after midnight?
- Generally for all patients
 - Patients with an ASA score of III or more
 - Obese patients
 - Patients with hernia or obstruction of the upper gastrointestinal tract
 - Diabetic patients
 - Pregnant women
 - Patients with an expected difficult airway
 - Patients with a bowel obstruction
 - Patients with an incomplete bowel obstruction
 - Patients with a history of functional dyspepsia of reflux
 - For no patients
 - Other reasons:...