www.jcimcr.org

JCIMCR OPEN ACCESS Journal of Clinical Images and Medical Case Reports

ISSN 2766-7820

Short Report

Open Access, Volume 6

Gastric sonography assessment after liquid diet initiation and fasting in a patient with metabolic dysfunction-associated steatohepatitis initiated with tirzepatide treatment

Hsin-Fu Chen[1]*; Shu-Lin Guo[2]; Cheng-An Lin[1]; You-Xin Feng[1]; Hsin-Yu Chen[3]

[1]Department of Anesthesiology, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi City, Taiwan.

[2]School of Medicine, Fu Jen Catholic University, New Taipei City, Taiwan.

[3]Division of Oral and Maxillofacial Surgery, Department of Dentistry, National Taiwan University Hospital, Taipei, Taiwan.

***Corresponding Author: Hsin-Fu Chen**
Department of Anesthesiology, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi City, Taiwan.
Tel: +886 981908750
Email: chris23chen@gmail.com

Received: Oct 03, 2025
Accepted: Nov 03, 2025
Published: Nov 10, 2025
Archived: www.jcimcr.org

DOI: www.doi.org/10.52768/2766-7820/3828

Abstract

Delayed gastric emptying before anesthesia induction is a concern in patients using Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists (RAs) and dual Glucose-Dependent Insulinotropic Polypeptide (GIP)/GLP-1 receptor agonists. As some consensus statements suggest that only clear liquids allowed 24 hours before anesthesia induction, this report implies that liquid diet rather than clear liquid diet might be acceptable. At the end of fasting, gastric sonography measurements revealed gastric antral external diameter 2.67 cm and internal diameter 0.88 cm with the cardiac probe. Using the abdominal curve probe, external diameter was 2.64 cm and internal diameter was 1.08 cm. However, more large-scale studies are warranted to confirm this hypothesis.

Keywords: Gastric ultrasound; Tirzepatide; Preoperative fasting; Metabolic Dysfunction-Associated Steatohepatitis (MASH); Aspiration.

Introduction

Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists (RAs) and dual Glucose-Dependent Insulinotropic Polypeptide (GIP)/GLP-1 receptor agonists, such as tirzepatide (Mounjaro), have emerged as therapies for Metabolic Dysfunction-Associated Steatohepatitis (MASH) [1,2]. However, delayed gastric emptying before anesthesia induction is still a concern [3,4]. Oprea, et al. developed a consensus statement which recommends continuing GLP-1 RAs perioperatively in patients without significant gastrointestinal symptoms (significant symptoms include severe nausea, vomiting, and inability to tolerate oral intake and do not include fullness or early satiety). And Oprea, et al. suggest fasting for solids for 24 hours (only clear liquids allowed) before anesthesia [5]. In this literature, liquid diet rather than clear liquid diet was implemented. And gastric antrum sonography was performed at last to measure the diameters.

Case presentation

A 33-year-old man with a history of biopsy-proven Metabolic Dysfunction-Associated Steatohepatitis (MASH) and gout had never been treated with GLP-1 or GIP receptor agonists. He denied alcohol consumption. Between 2010 and 2025, his Alanine Aminotransferase (ALT) levels fluctuated between 45 and 165 U/L. Before the initiation of tirzepatide (Mounjaro) 2.5mg subcutaneous injection on September 10, 2025, blood tests revealed Aspartate Aminotransferase (AST) 47 U/L and ALT 96 U/L, with other values within normal limits.

Following the injection of tirzepatide, he reported decreased food intake without other adverse effects. Beginning at 16:20 on September 13, he voluntarily adopted a liquid diet consisting of only coffee, tea, juice, milk, water, and sports drinks. This regimen was continued until 10:20 AM on September 14, when he initiated complete fasting without food or fluids.

Citation: Hsin-Fu C, Shu-Lin G, Cheng-An L, You-Xin F, Hsin-Yu C. Gastric sonography assessment after liquid diet initiation and fasting in a patient with metabolic dysfunction-associated steatohepatitis initiated with tirzepatide treatment. J Clin Images Med Case Rep. 2025; 6(11): 3828.

At 16:20 on September 14, a gastric ultrasound examination was performed to assess the gastric antrum diameter. Both a cardiac ultrasound probe and an abdominal curve probe were utilized. Measurements revealed gastric antral external diameter 2.67 cm and internal diameter 0.88 cm with the cardiac probe (Figure 1). Using the abdominal curve probe, external diameter was 2.64 cm and internal diameter was 1.08 cm (Figure 2).

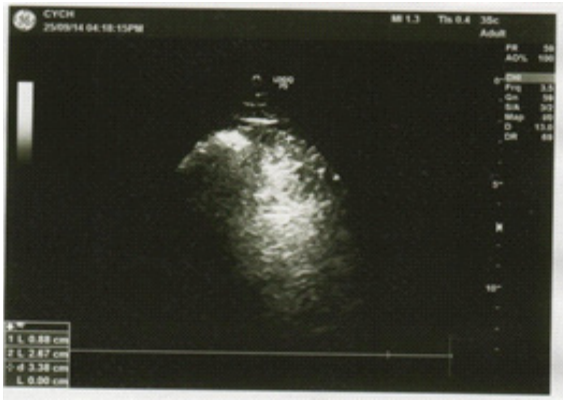

Figure 1: Gastric antrum external diameter 2.67 cm and internal diameter 0.88 cm using cardiac probe on standing position.

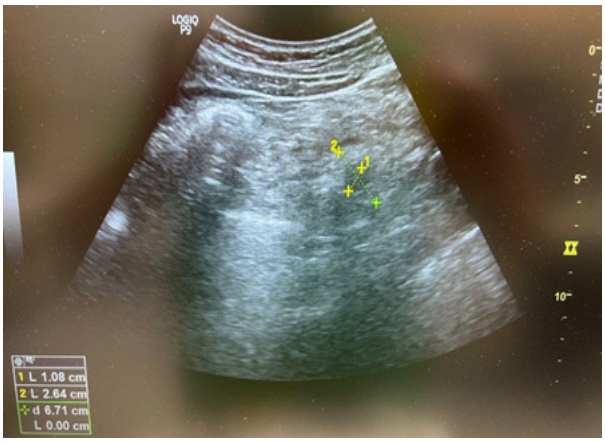

Figure 2: Gastric antrum external diameter 2.64 cm and internal diameter 1.08 cm using abdominal curve probe on standing position.

Discussion

When it comes to the preoperative fasting protocols for patients taking GLP-1 RAs, different consensus statements have been proposed due to the effect of delayed gastric emptying by GLP-1 Ras [3,4]. Oprea, et al. suggest fasting for solids for 24 hours (only clear liquids allowed) before anesthesia in patients without significant gastrointestinal symptoms [5]. However, taking clear liquids only is not tolerable for some patients. In some hospitals in Taiwan, the protocol was loosened to liquid diet. That is, taking liquid diet for 18 hours and then complete fasting for 6 hours before anesthesia is acceptable, such as in Chia-Yi Christian Hospital, Taiwan. Nevertheless, the protocols are still under debate.

In this literature, the patient with MASH under his first round of tirzepatide 2.5 mg treatment took liquid diet for 18 hours and then complete fasting for 6 hours. After that, the gastric antrum sonography revealed acceptable residual volume for anesthesia induction. However, more evidences are needed to confirm the safety of taking liquid diet rather than clear liquid diet.

Conclusion

As some consensus statements suggest that only clear liquids allowed 24 hours before anesthesia, this report implies that liquid diet rather than clear liquid diet might be acceptable for anesthesia induction. However, more large-scale studies are warranted to confirm this hypothesis.

Declarations

Conflicting interests: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding: The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

1. Loomba R, Hartman ML, Lawitz EJ, Vuppalanchi R, Boursier J, et al. Tirzepatide for Metabolic Dysfunction-Associated Steatohepatitis with Liver Fibrosis. N Engl J Med. 2024; 391(4): 299-310.
2. Sanyal AJ, Newsome PN, Kliers I, Østergaard LH, Long MT, et al. Phase 3 Trial of Semaglutide in Metabolic Dysfunction-Associated Steatohepatitis. N Engl J Med. 2025; 392(21): 2089-2099.
3. Klein SR, Hobai IA. Semaglutide, delayed gastric emptying, and intraoperative pulmonary aspiration: A case report. Can J Anaesth. 2023; 70(8): 1394-1396.
4. Fujino E, Cobb KW, Schoenherr J, Gouker L, Lund E. Anesthesia Considerations for a Patient on Semaglutide and Delayed Gastric Emptying. Cureus. 2023; 15(7): e42153.
5. Oprea AD, Ostapenko LJ, Sweitzer B, Selzer A, Irizarry-Alvarado JM, et al. Perioperative management of patients taking glucagon-like peptide 1 receptor agonists: Society for Perioperative Assessment and Quality Improvement (SPAQI) multidisciplinary consensus statement. Br J Anaesth. 2025; 135(1): 48-78.