



LETTER TO THE EDITOR

Difficult explant of intragastric balloon with severe fungal colonization: How do I do it? Response-commentary of the Spanish Bariatric Endoscopy Group[☆]



Retirada difícil del balón intragástrico con colonización fúngica grave: ¿cómo lo hago? Respuesta-comentario del Grupo Español de Endoscopia Bariátrica

Dear Editor,

We read closely the interesting article “Difficult removal of intragastric balloon with severe fungal colonization: How do I do it?” by de Quadros et al.,¹ published recently in the journal GASTROENTEROLOGÍA Y HEPATOLOGÍA that you edit.

Here at the *Grupo Español de Endoscopia Bariátrica* [Spanish Bariatric Endoscopy Group] (GETTEMO), we would like to offer the following clarifications:

1. Fungal colonization of the intragastric balloon (IB) is a rare adverse effect, having been detected in 5.8% of cases in the Brazilian Consensus out of more than 40,000 balloons.² Generally, it results in an asymptomatic incidental finding during the IB removal procedure.^{3,4} In a Spanish multicentre study, and in the Spanish Consensus Document of more than 5991 balloons of different models, it was not found to have caused any major complications.⁵
2. Various predisposing factors have been described that may increase the risk of opportunistic infections in patients with an IB: the delayed gastric emptying and gastric stasis produced as a primary effect of the IB, its permanent contact with the moist gastric mucosa and food remains, oral contamination during implantation, immunosuppressive states in the patient, heavy

smokers or regular use of antacid drugs such as proton pump inhibitors (PPIs). For this reason, when there is any risk factor present for fungal colonization of the IB, the patient should be assessed for *H. pylori* negativity, which may favour the administration of low doses of PPIs. In this publication,¹ high doses of PPIs together with immunosuppression due to dengue infection could be the causes. The author also comments on the balloon's duration of more than six months. This time-related factor should be minimal, given that in our series we did not find evidence of an increase in this colonization in balloons designed for durations of 12 months.⁵

3. Fungal colonization has been documented with different balloon models, both Heliosphere BAG^{®3}, BioEnterics^{®4} and others. Air balloons appear to increase the risk, probably due to their double-layered design.² Da Silveira et al.⁶ have also commented that silicon based coatings are more susceptible to adherence by *Candida*.
4. During the endoscopy, spontaneous hyper/hypoinflation of the IB can be identified. Moreover, greyish white, brownish black and yellowish green necrotic plaques^{3,4} related to the fungal deposits can be seen on its surface. Usually, the gastric and oesophageal mucosa has a normal appearance.⁴
5. The microbiological study of these plaques often reveals colonization by *Candida albicans*,^{3,4} which is usually sensitive to miconazole, ketoconazole, amphotericin B, fluconazole, flucytosine and itraconazole.³ Occasionally, the coexistence of other opportunistic organisms such as *Enterobacter cloacae* has been detected.
6. There is not currently any consensus establishing recommendations to avoid contamination. These probably would need to be identified in patients with risk factors. Nor is there a uniform criterion when contamination is identified. In the Brazilian Consensus Document,² 36.4% of those surveyed agreed that nothing needed to be done, 27.3% would discontinue PPIs, 18.2% would discontinue PPIs and administer antifungals and 18.2% would only administer antifungals. In our opinion, suspending PPIs could lead to other more significant complications, so one option would be to reduce their dose (20 mg/24 h) and add antifungals for symptomatic patients, those with systemic disease and damaged gastrointestinal integrity, immunocompromised patients or those in bariatric surgery programmes. In this case report,¹ because the infection detected in the balloon

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was a colonization rather than a systemic infection, only a non-specific supporting treatment was recommended.

7. Unlike the case presented here by de Quadros et al.,¹ endoscopic removal is often accomplished without problems.^{2,5} There are other situations, such as polyurethane IBs or early extractions due to intolerance, in which, due to the more rigid composition of the material or its low wear, its puncture, deflation and/or removal may be more complex, and the strategy described in this publication may be used instead.

To conclude, although fungal and/or bacterial colonization of intragastric balloons is rare and often asymptomatic, we believe there should be awareness of this entity and its risk factors, and that recommendations and standards for action should be established to prevent the onset of complications.

Conflicts of interest

Dr Espinet is a Consultant for Apollo Endosurgery, but has no conflicts of interest with regard to this letter. The other authors have no conflicts of interest.

References

1. de Quadros LG, Silva M, Galvão Neto MDP, Grecco E, de Souza TF, Teixeira A, et al. Difficult explant of intragastric balloon with severe fungal colonization: how do I do it? *Gastroenterol Hepatol*. 2019, <http://dx.doi.org/10.1016/j.gastrohep.2018.11.005>, pii:S0210-5705 [article in English, Spanish].
2. Neto MG, Silva LB, Grecco E, de Quadros LG, Teixeira A, Souza T, et al. Brazilian Intragastric Balloon Consensus Statement (BIBC): practical guidelines based on experience of over 40,000 cases. *Surg Obes Relat Dis*. 2018;14:151–9, <http://dx.doi.org/10.1016/j.soard.2017.09.528>.
3. Şimşek Z, Gürbüz OA, Çoban Ş. Fungal colonization of intragastric balloons. *Endoscopy*. 2014;46 Suppl. 1:E642–3, <http://dx.doi.org/10.1055/s-0034-1390838>.
4. Kotzampassi K, Vasilaki O, Stefanidou C, Grosomanidis V. *Candida albicans* colonization on an intragastric balloon. *Asian J Endosc Surg*. 2013;6:214–6, <http://dx.doi.org/10.1111/ases.12025>.
5. Espinet Coll E, López-Nava Breviere G, Nebreda Durán J, Marra-López Valenciano C, Turró Arau R, Esteban López-Jamar JM, et al. Spanish Consensus Document on Bariatric Endoscopy. Part 1. General considerations. *Rev Esp Enferm Dig*. 2018;110:386–99, <http://dx.doi.org/10.17235/reed.2018.4503/2016>.
6. Da Silveira LC, Charone S, Maia LC, Soares RM, Portela MB. Biofilm formation by *Candida* species on silicone surfaces and latex pacifier nipples: an in vitro study. *J Clin Pediatr Dent*. 2009;33:235–40.

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