

# Intragastric balloon: use of prophylactic nystatin for the prevention of fungal colonization

## Abstract

**Introduction:** The intragastric balloon is the medical treatment indicated for patients with overweight and obesity, it's safe and effective with great results all over the world. But in some cases, fungal colonization was observed and can be promoted early removal. So, this article has evaluated the effectiveness of the use of antifungal (Nystatin) to prevent the appearance of fungi in silicone. Patients (120) were divided into two groups: 50 milliliters of nystatin (100,000 IU/ML) mixed with saline solution with Methylene Blue in the IGB filling and IGB filled with saline solution and Methylene Blue. Results: The prevalence of fungal colonization was 9.25% and 19.15% for the group with and without antifungal respectively. There was no significant difference in outcomes between gender and age. **Conclusion:** Nystatin into the saline solution in the IGB filling reduced the fungal colonization.

**Keywords:** obesity, fungal, nystatin, intragastric balloon, fungal colonization

Volume 9 Issue 5 - 2019

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**Received:** October 18, 2019 | **Published:** October 31, 2019

## Introduction

The intragastric balloon (IGB) has been used for more than 20 years in Brazil as an endoscopic method for assisting weight loss, and some interurrences were observed during more than 10,000 procedures performed.<sup>1</sup> One of these interurrences is the presence of fungi in the IGB, increasing the friability of the silicone and inducing the premature rupture of the IGB, as well as gas hyperinflation.<sup>2-4</sup> The aim of this study was to evaluate if the use of Nystatin can decrease the prevalence of fungal colonization cases in IGB devices.

## Methodology

To evaluate the effectiveness of the use of antifungal (Nystatin), diluted in intragastric balloon filling saline solution, in order to prevent the appearance of fungi in silicon, 120 patients (76.7% women) who underwent adjustable intragastric balloon Spatz3 throughout the year 2017. Patients were divided into two groups by randomized clinical trial: 60 patients had 50 mililiters of nystatin (100,000 IU/ML) mixed with saline solution with Methylene Blue in the IGB filling (Test Group) and the other 60 patients had their IGB filled with saline solution and Methylene Blue (Control Group). The design of this study was double masked. Only the nursing team knew which patients had received antifungals in the filling of the balloon.

The initial volume of IGB filling in all patients was 700ml. Initial BMI started at 27 kg/m<sup>2</sup> and IGB maximum period implant was 12 months. When the IGB was removed, the Endoscopist described whether there was fungal colonization on the silicone surface and, when there was, divided the colonization on the silicone surface in 4 stages: less than 10% (insignificant), between 10% and 25% (light), between 20 and 50% (moderate) and more than 50% (accentuated). When there was insignificant colonization (up to 10%) it was described as normal in the database. All ethical guidelines established

by the Research Ethics Committee were strictly followed, and all patients signed the Informed Consent Form.

## Results

Were excluded from the final analysis 19 patients (15.84%): of these 2 (1.66%) due to early removal, 15 (12.5%) did volume adjustment during the IGB and 2 (1.66%) balloon spontaneous deflation or leakage. The sample was young adults (Age: 30.49±5,36) and the mean weight loss was 20.64±16.8 kg. Among the 101 patients analyzed, 54 had antifungal in the IGB and 47 only saline and methylene blue. In the group with antifungal the incidence of fungal colonization was 9.25% (n=5). In these, 4 (80%) presented light colonization and 1 (20%) with moderate colonization. In the Control Group the prevalence of fungal colonization was 19.15% (n=9). In these 4 (44.5%) presented light colonization, 3 (33.3%) with moderate colonization and 2 (22.2%) with accentuated colonization. There was no significant difference in outcomes between men and women and.<sup>5</sup>

## Discussion

During the IGB insertion procedure, contamination may occur through the oral cavity, or even by IGB manipulation. The device induces a delay in gastric emptying, and this mechanism may facilitate fungal colonization.<sup>5</sup> In addition, fungus like *Candida* colonize and form biofilms more easily in silicone.<sup>6</sup>

The use of mixed nystatin to the saline solution in the IGB filling reduced the fungal colonization in the silicone coating by half, demonstrating that this practice has a positive effect with low cost and significant difference in fungal prevention. However, even associated with IGB friability, fungal colonization does not prove to be of such importance since balloon spontaneous deflation or leakage corresponded to only 1.66% of the total initial sample and the 14

patients who presented fungi in the IGB (13.86 %) did not present any clinical symptoms.

## Acknowledgements

None.

## Conflicts of interest

The author declares that there is no conflict of interest.

## Funding details

None.

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