

The Evolution of the Intra-gastric Balloon Use in Obese People according to a Bibliometric Study of the Articles Published from 1980 to 2017

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Abstract

Obesity is associated with a number of serious and chronic diseases. The use of intra-gastric balloon offers an alternative choice to obese people who wish to lose weight without undergoing a bariatric surgery. It is a technique with a 30 year history that began to regain the scientific interest. According to the present bibliometric study of the articles published during 1980-2017, 157 journals showed interest and published 500 relevant articles. Obesity Surgery has the largest influence on the topic, as it has published numerous articles of high importance. The number of publications on intra-gastric balloon gradually increased over the past decade, showing that there is a lot of discussion about this technique and its benefits.

Introduction

The use of intra-gastric balloon in obese people has attracted a lot of attention and has been widely studied the last 35 years. According to the World Health Organization (WHO), obesity is defined as abnormal or excessive fat accumulation that raises health risks and may reduce the life expectancy of the individual [1]. Obesity is associated with serious chronic diseases such as hypertension, cardiovascular diseases, diabetes and cancer. For these reasons, treating obesity has become a critical matter. Data have shown that the past decades, the number of obese people has grown significantly in the western countries as well as in Asia and Africa [2, 3] and non-invasive methods such as changes of life-style, diet and pharmacological treatment, do not have satisfying, long lasting effects [4].

Taking these facts under consideration, it is well expected that doctors as well as the rest of the society to become interested in alternative ways for obesity treatment, such as typical bariatric surgeries (gastric bypass, sleeve gastrectomy, gastric band surgery) and endoscopic therapies (intra-gastric balloon). The first ones are globally performed as standard method for treating severe obesity [5] but they can cause serious complications, that may become life-threatening, if not treated correctly [6, 7, 8]. Moreover, the psychological and economical burden of a surgery must not be underestimated.

Gastrointestinal endoscopy has become an alternative choice for treating obesity, safer and less expensive compared to bariatric surgical methods [9]. Compared to surgery, bariatric endoscopy is shown to be less effective in weight loss, but it has also less complications rates [4]. For these reasons, endoscopic approach of obesity treatment remains an important and controversial issue in the field of bariatric. This article is a bibliometric analysis of the intra-gastric balloon use in obese people, starting from the first publications in the early '80s until today.

Materials and Methods

The current bibliometric analysis used all publications listed in the database "Web of Science" under the term "The use of intra-gastric balloon for obesity" from 1980 until 2017. The results of the database search are listed in the appendix I. Double hits were excluded.

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Results

Database search retrieved a total of 500 publications, starting from 1982. The articles are published in 157 journals. It is worth underlining that more than half journals (65%) have one publication concerning the intragastric balloon use and only 4 journals presented an ongoing interest on the subject, with more than 10 relevant publications (Fig 1). In the second group of journals, "Obesity Surgery" stands out, gathering 32% of publications (162 articles), followed by "Gastrointestinal endoscopy", "Gastroenterology" and "Surgery for Obesity and related diseases", which published 4% of all articles (19-20 articles each) (Fig 2).

As it is shown in Fig 3, up until 2000, scientific interest remained relatively low. At that point (1982-2000) there were approximately 4 publications per year. The number of publications is gradually rising from 2001 until 2015 (7 to 41 articles per year). Currently (2016-2017), the interest in intragastric balloon use in obese people appears to be stronger, with more than 50 publications per year. Articles with the higher impact factor, as estimated by the number of times cited, have been published over the last 15 years and mainly between 2002 and 2007 (Fig 4). As expected, the most cited articles are published in Obesity Surgery during the same period (Fig 5).

Discussion

Intragastric balloon is considered today as an effective method for treating obese people [10]. The purpose of this technique is to provide a temporary help to people who wish to lose weight but do not meet the criteria for bariatric surgery or they face high surgical risks due to obesity and need to lose weight before going into surgery [11]. The intragastric balloon is placed endoscopically into the stomach and it is removed after 4-6 months. It reduces food intake by helping patients to fill full sooner. It accelerates the sense of satiety by working as an obstacle, reducing the total size of the stomach and delaying the stomach emptying [12].

A small reference in the history of intragastric balloon use in obese people can provide a better understanding of this technique evolution. The first clinical trials appeared in the beginning of 1980 [13, 14]. The first intragastric balloon was designed by Garren and Edwards (GEGB) and was approved by the US Food and Drug Administration (FDA) in 1985. By 1989, complications of the method came to light resulting in the final withdrawal of the device in 1992 [15]. However, during the '90s a number of similar devices were developed. The first reliable intragastric balloon was Orbera, also called BIB, and was approved in EU (CE certification) in 1998, while FDA approval for use in the US came many years later, in 2015 [16].

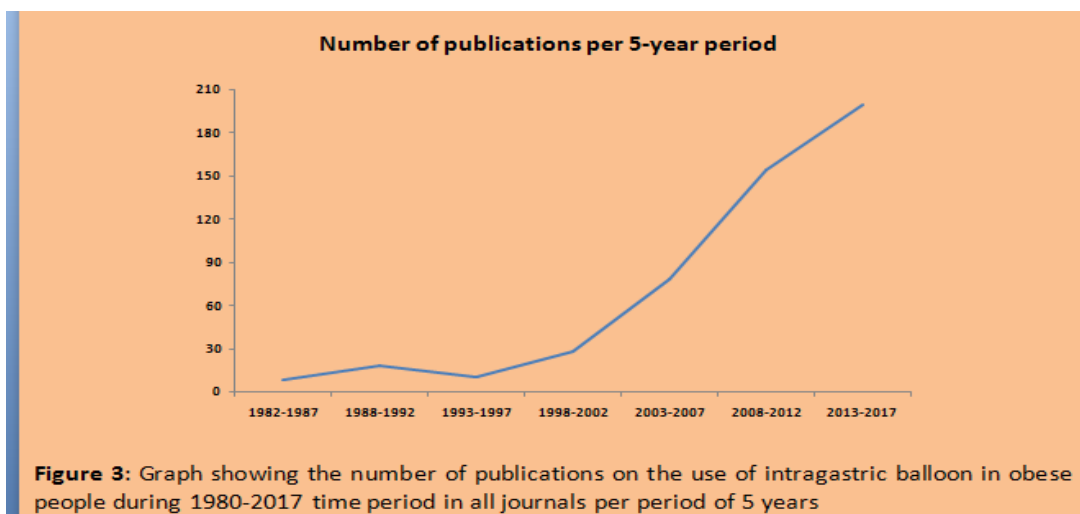
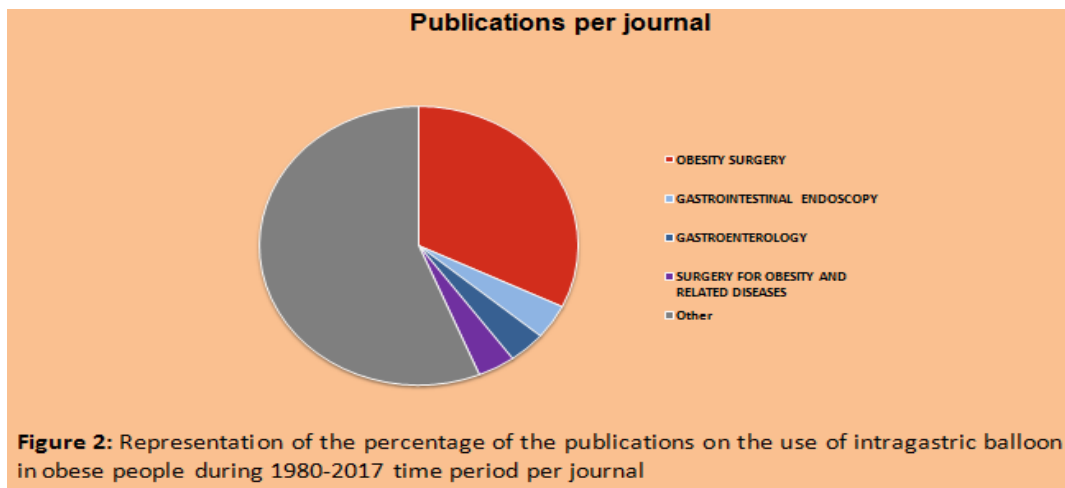
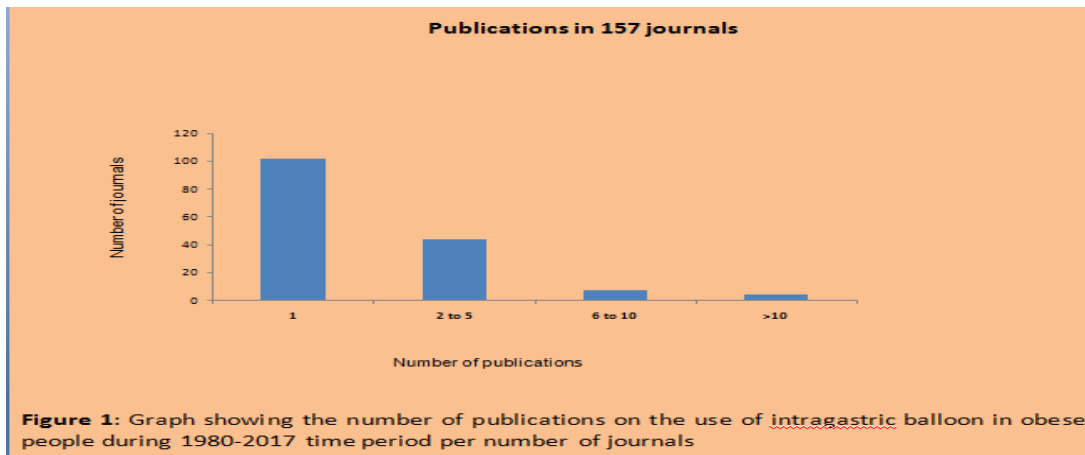
Obesity is associated with a number of serious and chronic diseases. Articles on the intragastric balloon use in obese people are not limited only in surgical/gastroenterological journals but they expand also in nutritional (Nutrition in Clinical Practice), behavioral (Physiology and Behaviour), pediatric (Clinical Pediatrics) journals, as well as in journals of general interest (PLOS). In these journals, the number of relevant publications remains low. As expected, half of the articles until today have been published in journals focused on surgery and gastroenterology. Specifically, Obesity Surgery that focuses on bariatric surgery, gathers almost 1/3 of the publications on intragastric balloon and appears to be the journal with the biggest influence.

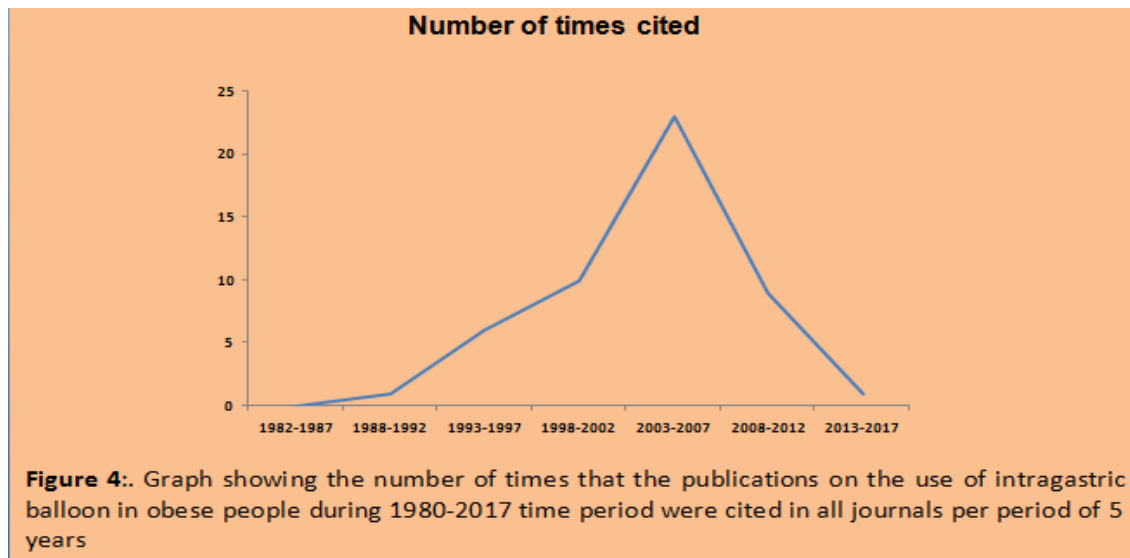
According to our results, the scientific interest on the efficacy of intragastric balloon in obesity treatment tends to increase from 2000 onwards. This observation can be explained by the fact that the European Union officially approved its reliability in 1998. In the past two years, the number of the relevant studies rises dramatically, and this observation could be partially explained because intragastric balloon is approved by the FDA. Thus, the use of the device is expanded in the United States, giving the chance for more clinical trials compared to the past.

The raise of the scientific interest on the subject can be also noticed by the increased number of times cited for the articles published between 1998-2012. The most important articles, as it is shown by the number of times cited, have been published in Obesity Surgery. This opinion is enforced by the fact that in the group of the top 50 articles (10% of the total amount), Obesity Surgery published half (50%). Apart from this, it is worth mentioning some individual cases of articles that have been published in different, non surgical/gastroenterological journals and received special attention with a high number of times cited [17, 18, 19].

Conclusion

The use of intragastric balloon in obese people is a method with a long history that began to regain the scientific interest. The most important articles on the subject were published after 2000 and, in their majority, can be found in bariatric surgery journals. Despite the improvements of the devices used, the results of the studies are conflicted thus the conduction of larger clinical trials and meta-analyses is of high importance. [16]





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