

# How effective is intragastric balloon insertion as an obesity treatment in Korea?

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See “Efficacy and safety of intragastric balloon for obesity in Korea” by Kwang Gyun Lee, Seung-Joo Nam, Hyuk Soon Choi, et al., Clin Endosc 2023;56:333–339.

The number of obese and overweight patients has increased markedly worldwide, nearly tripling since 1975. More than 650 million adults older than 18 years of age have been reported to be obese and over 1.9 billion overweight.<sup>1</sup> In addition, the prevalence of childhood obesity is increasing rapidly. The rapid increase in the number of obese patients poses a serious socioeconomic burden, and it has become an important medical issue owing to the various metabolic diseases associated with obesity. Therefore, obesity is not merely a cosmetic problem and should be recognized as a chronic disease requiring continuous care, similar to disorders such as hypertension or diabetes, and multidisciplinary approaches for successful management.

Dietary and lifestyle modifications and pharmacological therapies are the primary treatments for obesity. However, it is difficult to achieve sustained weight loss and maintain optimal body weight through these interventions. Thus far, bariatric surgery has been reported to be the most effective therapeutic modality for weight reduction; it has shown improvements in

the indicators of metabolic diseases. However, there have been reports of bariatric surgery being related to higher rates of complication, reintervention, and mortality than those associated with other treatments.<sup>2</sup> One of the issues to consider is that surgery irreversibly changes the anatomy.

Endoscopic bariatric and metabolic therapies (EBMTs) can be safely administered and result in relatively large weight loss effects. Furthermore, they are associated with fewer serious adverse events and cost-effectiveness compared with bariatric surgery. Moreover, they allow for the possibility of reversing postprocedural anatomic changes.<sup>3</sup> Therefore, there has been a growing interest in EBMTs, and their use has gradually increased over the past decade. Intragastric balloon (IGB) insertion in the stomach is performed to induce early satiety; furthermore, it causes delayed gastric emptying. Stretching of the stomach wall stimulates the vagus nerve receptors and the brain centers responsible for satiety. Excess weight loss (EWL) in the range of 24% to 50% has been reported after IGB insertion.<sup>4</sup>

The World Health Organization (WHO) defines obesity as a body mass index (BMI) of  $\geq 30$  kg/m<sup>2</sup>. However, it should be considered that the definition of obesity cannot be the same across races. It has been reported that the risk of developing diabetes and cardiovascular disease increases even under BMI  $\geq 25$  kg/m<sup>2</sup> and higher abdominal fat and body fat percentages than Westerners at the same BMI in East Asians including Koreans.<sup>5</sup> WHO recommends different BMI ranges for the Asia-Pacific region based on risk factors and morbidities. The cutoffs for

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overweight (BMI,  $\geq 23$  kg/m<sup>2</sup>) and obesity (BMI,  $\geq 25$  kg/m<sup>2</sup>) in Asians are lower than the WHO criteria. Although the efficacy of EBMTs, including IGB insertion, should be evaluated according to these criteria, there is not enough research on EBMTs in the East. A Japanese nationwide survey on the effectiveness and safety of IGB insertion was conducted in 399 obese patients with a BMI of  $\geq 27$  kg/m<sup>2</sup> who underwent IGB insertion using the BIB/Orbera system (Apollo Endosurgery). In this study, the average percent EWL (%EWL) and percent total weight loss (%TWL) after IGB removal were 46.6% and 11.5%, respectively. One year after IGB removal, successful weight loss, defined in terms of %EWL and %TWL, was maintained in 44.7% and 34.1% of the patients, respectively.<sup>6</sup> In an Egyptian study conducted among 1,600 patients with a BMI of  $\geq 25$  kg/m<sup>2</sup>, the average %EWL and %TWL were 50.1% and 25.6%, respectively. There was a statistically significant difference in HbA1c and blood pressure before and after intervention.<sup>7</sup> In 2020, two Korean studies on the short-term treatment performance of IGB implants using End Ball (Endalis) were published. Choe et al.<sup>8</sup> performed IGB insertion in 12 patients (BMI, 26.8–37.3 kg/m<sup>2</sup>) from 2016 to 2019. The IGB was removed early because of nausea and severe abdominal pain in one patient; there were no other serious adverse events. The %TWL and %EWL were 10.1% $\pm$ 5.4% and 54.4% $\pm$ 36.0%, respectively, and low-density lipoprotein cholesterol also markedly reduced after IGB removal. Another study that recruited 74 obese women (BMI,  $\geq 25.0$  kg/m<sup>2</sup>) showed 33% EWL without skeletal muscle loss or mineral deficiency.<sup>9</sup> In a retrospective cohort study of 80 patients with a BMI of  $\geq 30$  kg/m<sup>2</sup> that was published in 2022, the %TWL and %EWL were 10.8% $\pm$ 6.8% and 43.7% $\pm$ 27.6%, respectively.<sup>10</sup> The majority of the participants in the study (71.4%) experienced nausea, vomiting, or abdominal pain; however, there were no serious adverse events. All three previous studies showed good short-term efficacy of IGB insertion in Korean patients with obesity. These studies have some limitations in that the number of patients who participated was small and most of them were female. In addition, the treatment results were analyzed only for a short period until IGB removal. Despite these limitations, these studies are expected to provide one of the most important treatments for obese Korean patients in the future. Considering the high prevalence of gastric cancer in Korea, IGB insertion may have an important meaning in terms of the most appropriate endoscopic treatment to be considered rather than other EBMTs including endoscopic sleeve gastropasty or surgery, which can cause mucosal damage and result in ulcer scarring

and fibrosis or irreversible anatomical changes.

The biggest limitation concerning EBMT use in Korea is that IGB insertion is the only endoscopic therapy that can be performed and the available balloons are still limited to End Ball and BIB. Another major limitation is that the indication for IGB insertion, as a new health technology assessment announced in 2021, is limited to patients with a BMI of  $\geq 30$  kg/m<sup>2</sup>, in accordance with the definition of Western obesity. These treatment indications should be expanded in consideration of the obesity definition in Koreans, with IGB insertion being included as a bridging therapy for high-risk patients undergoing bariatric surgery when it is covered under the national health insurance scheme. For IGB insertion to be widely implemented and its indications to expand, large-scale prospective studies on the effect of weight loss and metabolic disease improvement up to several years after IGB removal and with an appropriate sex ratio of patients who meet the Korean obesity definition are needed.

### Conflicts of Interest

The author has no potential conflicts of interest.

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