

## Endoscopic intra gastric balloon placement for obesity: case series of the first five balloons placed in Sri Lanka

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### Introduction

Prevalence of obesity and its complications are increasing worldwide. A similar trend is seen in Sri Lanka during the last decade. In a study conducted among Sri Lankan adults, overweight and obesity were seen in 25.2% and 9.2% respectively [1]. Complications associated with obesity range from simple fatigue to overt cardiovascular disease, chronic liver cell disease and obstructive sleep apnea. Weight loss is the primary treatment for managing and preventing complications associated with obesity. Several weight loss strategies are identified and range from non-invasive interventions to more invasive endoscopic and surgical procedures. Non-invasive methods include dietary changes and increase physical activity, but these unfortunately have not been able to translate to significant and sustainable weight loss and reduction of complications [2]. Recently bariatric surgery has shown promise in effective weight reduction [3]. Although over the last few years the number of bariatric surgeries have increased, only 1.1% of eligible patients

underwent bariatric surgery in the US in 2018 [4]. Patients fear of complications, costs involved, and stigma may have contributed to this low number. Bariatric surgery is also generally recommended for class II and III obesity; therefore, a considerable proportion of obese individuals would not become eligible for weight loss surgery. Thus, endoscopic bariatric techniques were developed to bridge this hiatus and even bridge patients for bariatric surgery [5]. Intra gastric balloon placement (IGB) is one such endoscopic bariatric tool used for weight reduction, and unlike surgery can be effectively and safely used in class I and II obesity. [5] These balloons are endoscopically placed as a day procedure. Due to this simple placement technique intra gastric balloons have an advantage over other techniques and are better accepted. Here we describe the first five patients to undergo Endoscopic bariatric balloon placement in Sri Lanka.


### Case series

The average age of our patients was 44.2 years (34 – 60) and all patients had an obesity class of II or over. The average percentage loss of weight was 15.96% (10.7-22%) over six months. No major complication was reported by any patient.

Age (years)	Gender	BMI	Obesity class	Comorbidities	Initial BW (Kg)	BW after 6 months (Kg)	% loss of weight
34	Male	43.4	III	None	122.6	95	22
35	Female	34	II	None	84	75	10.7
55	Male	46	III	DM	155.5	130.4	16.4
60	Female	42	III	None	115	100.4	12.6
37	Male	32	II	None	90.4	74	18.1

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## IGB placement method

All patients were counselled regarding the procedure and post balloon placement nutritional intake, prior to placement of the balloon. The procedures were performed as a day admission under deep sedation by the 1st author (ANR) of this study. "End-ball®" intra-gastric balloons were used in all five patients. Initially routine endoscopy was performed, and guide wire (0.035 inch, 450cm) placed with the distal flexible tip in the duodenum. The balloon was introduced over the wire into the stomach under direct vision of the endoscope. Whilst the balloon was placed in the stomach it was filled with 400 ml of water mixed with indigo carmine dye. The patient was discharged the same day and followed up by the nutritional team with monitoring of weight and nutritional counselling monthly. Proton pump inhibitors and antiemetics were prescribed for two weeks post balloon placement. The IGB was kept in the stomach for a period of six months after which it was removed using a standard technique of aspirating the balloon content and withdrawing the balloon orally with a special grasping forceps.

## Discussion

Obesity is associated with increased all-cause mortality and contributed to more than 4 billion deaths worldwide in 2015 [6]. However unlike many other chronic diseases, obesity management is usually limited to a casual unstructured conversation of the need for lifestyle interventions between a physician and patient during a visit for an unrelated illness. Although important as an intervention, lifestyle modification lacks the efficacy and durability, as a standalone treatment strategy and is associated only with a modest weight loss [7]. Pharmacological treatments are available but reduce weight by only 3-9% compared to lifestyle therapy alone and are also associated with undesirable side effects. [8]

Bariatric surgery has shown great promise as a treatment option for obesity but lacks universal acceptability due to its invasive nature and is underutilized by those who are potentially eligible for surgery (BMI  $\geq 35\text{kg/m}^2$  or  $\geq 30\text{kg/m}^2$  with comorbidities) [9] Those with less severe obesity are left with limited options to achieve weight loss, despite them contributing higher to the prevalence of obesity related complications. IGB insertion is widely accepted as a bariatric therapy for class I and II obesity. [10] It's relatively simple, reversible, cost effective and repeatable as a technique and helps patients initiate a weight loss program, and can even bridge to a more durable treatment option like surgery. These advantages over the other available techniques, allows IGB to be used by a larger segment of the obese population especially those with lower classes of obesity.

The technique of weight loss appears to work in two methods: a restrictive pathophysiology by the introduction of a space occupying device and by triggering early satiety by stimulation of gastric mechanoreceptors resulting in vagal signals to the brain [11] It is well accepted that IGB induces a weight loss of up to 20% over 6-month period. In our case series the average weight loss was 15.96% (10.7-22%) over six months.

As described in the literature and seen in our patients nausea and vomiting is frequently seen during the initial few days of balloon placement.[12] Antiemetic drugs given prophylactically during this initial period helps tolerance of the IGB. Proton pump inhibitors should also be prescribed to protect the gastric mucosa and minimize gastro esophageal reflux symptoms. More serious adverse effects of IGB included gastrointestinal bleeding due to gastric ulcer, perforation, and small-intestinal obstruction secondary to spontaneous deflation of the balloon. [8] [13][14] None of these serious side effects were seen in our patient while the balloon was in situ. Although IGBs are an attractive intermediate option between, diet, exercise and bariatric surgery; many unanswered clinical questions remain regarding its overall long-term safety, tolerability, and sustainable weight loss.

In conclusion, IGB therapy with moderate- to high-intensity lifestyle therapy is an attractive weight loss strategy over lifestyle interventions alone, for those not meeting criteria for bariatric surgery. As clinicians, we need to be aware of the different weight loss strategies, the benefits and limitations and individualize these treatments for each obese person and utilize the available treatment strategies effectively.

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**Learning Points:**

- Endo bariatric balloons are a safe and effective method to loose weight in patients who are in early classes of obesity.
- It can also be used as a bridge to more definitive Bariatric surgeries.
- Weight loss is mainly due to the restrictive effects supported by early satiety due to Neuro hormonal stimulation of the balloon.