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Original Research Article

Comparative study between readjustable gastric balloon filled with air and others filled with saline inserted for obese patients and their effect on weight loss

Ahmed Abdel Monem Ibrahim*

Department of Surgery, Mansoura University Hospital, Mansoura, Egypt

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***Correspondence:**
Dr. Ahmed Abdel Monem Ibrahim,
E-mail: ahmedmonem69@yahoo.com

ABSTRACT

Background: Gastric balloon is widely used nowadays for weight loss for a category of patients that need loss of weight with average from 15 to 40 kgs and there is a long time of revolution for design and construction of gastric balloon beginning from non-inflatable air filled to re-inflatable saline filled ones.[1] The gastric balloon we used in our study is the re-inflatable saline filled type which formed from very tough type of elastic material resist gastric acidity for long as more than one year,[2] and the advice period for insertion ranging from 6 months to one year before removal.[3] Aim was to compare the effect of filled material that we inject inside the balloon either air or saline on the reduction of weight of patients at the end of one year insertion of the re-inflatable gastric balloon.
Methods: Thirty obese patients (19 female) and (11 male) undergoing gastric balloon insertion at Alsalama hospital Abu Dhabi are classified into two groups (group I) 15 patients (9 female and 6 males) are subjected to insertion of re-inflatable gastric balloon filled with 700 ml air and (group II) 15 patients (10 female and 5 male) are subjected to the insertion of re-inflatable gastric balloon filled with saline mixed with methylene blue and both groups was followed at 2,4 and 12 months postoperative.
Results: The use of gastric balloon filled with saline causes more weight loss in patients than re-inflatable gastric balloon filled with air at the end of study.
Conclusions: The use of saline filled re-inflatable gastric balloon insertion for weight reduction gives more good results in reduction of patient's weight in our study.

Keywords: Balloon, Gastric, Saline filled

INTRODUCTION

Obesity is the number one worldwide epidemic. There are three hundred million obese and one billion overweight people worldwide. With all the media attention people are becoming more aware by the health hazards associated with being overweight or obese heart disease, stroke, cancer, diabetes and hypertension are among the consequences of obesity. Commercial weight loss systems are expensive and unsupervised dieting can be a very difficult and frustrating experience.[4]

Given the dangers of associated with obesity surgery, non-surgical solutions have been growing in popularity.

Intragastric balloon in conjunction with a supervised diet and behavior modification program can help to achieve the health and aesthetic benefits associated with weight loss.[5]

Long time experience with gastric balloon insertion have reported modest successful weight loss and the patient satisfaction. Yet, current intragastric balloons have not received. Worldwide acclaim nor have they gained

popularity.[6] The reason two-fold; Current balloons are not adjustable and lose their effect after 3 months; and current balloons must be removed at 6 months.[7]

The introduction of new era of an adjustable balloon gives us more better results. Other non-inflatable balloons offer one balloon volume that is not changed over the course of 6 months. We try to inflate as much as possible in order to get the best results. Higher balloon volumes can be more uncomfortable.[8]

The aim of the study was to compare the effect of filled material that we inject inside the balloon either air or saline on the reduction of weight of patients at the end of one year insertion of the re-inflatable gastric balloon.

METHODS

Thirty obese patients (19 female) and (11 male) undergoing gastric balloon insertion are classified into two groups (group I) 15 patients (9 female and 6 males) are subjected to insertion of re-inflatable gastric balloon filled with 700 ml air and (group II) 15 patients (10 female and 5 male) are subjected to the insertion of re-inflatable gastric balloon filled with saline colored with methylene blue and both groups were followed at 2,4 and 8 months postoperative.

Preoperative preparation

All patients subjected to the study are fully examined beginning by full history including complete family history and drug history "Always listen to the patient, they might be telling you the diagnosis."

Examination of patients should include,

- Examination of the cardiovascular system including, chest examination, auscultation of the heart
- Examination of the respiratory system
- Examination of the abdomen
- Checking for hernia and lumps in the groin and scrotum
- Examining lumps
- Neurological history and examination
- Competence at orthopedic examination, which should include back examination, neurological examination of the lower limbs for knee and hip history and examination purposes, shoulder examination, and assessment of ankle injuries
- Examination of tender, hot swollen joints
- Gynecological history and examination
- Breast lumps and breast examination
- Peripheral pulses
- ENT examination
- Examination of the eye
- Mental state examination
- Calculation of patient BMI patient weight/patient height x 100
- All patients are followed during the procedure and regular calculation of weight done at regular intervals at 2 ,4 and 8 months after balloon insertion.

RESULTS

All patients subjected to general anesthesia and lying left lateral position fully intubated preparation of the balloon by opening of the contents connection of reinflation valve system preparation of the inflation syringe and application of the plastic small cap for application of the balloon system to the tip of the gastroduodenal endoscope application of the balloon system align with the endoscopy after preparation of the endoscope and previous gastric and duodenal examination look.

In some studies, the use of saline filled re-inflatable gastric balloon gives more good results in weight loss than air filled or non-inflatable gastric balloon,[8] Caglar et al.

Introduction of the endoscope together with the balloon system till the pylorus of the stomach and by the help of assistance inflation of the balloon with 700 ml air using 50 ml syringe in (group I) patients and 700 ml saline mixed with methylene blue in (group II) patients. After complete filling of the balloon which sometimes if not fully inflated we increase the inflated amount to 900/1000 ml either air or saline and deflate again to the study amount 700 ml.

After complete filling of the balloon it will separate spontaneously from the endoscope leaving it free and after removal traction of the valve system and applying valve closure and leave it to retract into the stomach.

DISCUSSION

From these results, it seems that the use of gastric balloon insertion in obese patients is an effective technique for weight loss,[9] also it seems that more weight loss occurs with patients subjected to insertion of re-inflatable saline filled gastric balloon.[10,11]

We select thirty obese patients 19 female and 11 male undergoing gastric balloon insertion at our Alsalama hospital Abu Dhabi are classified into two groups (group I) 15 patients (9 female and 6 male) are subjected to insertion of re-inflatable gastric balloon filled with 700 ml air and (group II) 15 patients (10 female and 5 male) are subjected to the insertion of re-inflatable gastric balloon filled with saline mixed with methylene blue and both groups was followed at 2, 4 and 12 months postoperative .

For (group I) patients the minimum age was 24 years and the maximum age was 50 years with mean age group 30±12.43. And for (group II) patients age group of 25 years minimum and 49 years maximum with mean age 31±11.76 year (Table 1).

Table 1: Demographic data of patients.

		(Group I) no=15	(Group II) no=15
Age	Minimum	24 years	25 years
	Maximum	50 years	49 years
	Mean±SD	30±12.43 year	31±11.76 year
Sex	male	6	5
	female	9	10
BMI(kg/m2)	Minimum	45	46
	Maximum	58	57
	Mean±SD	48±5.4	48

BMI of all patients was calculated with minimum 45 and maximum 58 in (group l) with mean of 48±5.4, and was minimum 46 and maximum 57 in (group ll) with mean of 48.

From these results as illustrated in (Table 2) in (group l) the minimum weight for male patients before balloon insertion was 99 kgs and 84 kgs with mean of total % of weight loss after one year 15.16%, the maximum weight was 126kg before balloon insertion and 116 kgs one year after balloon insertion with mean of 7.94 % for male patients.

In (Table 2) (group I) female patients the minimum weight before balloon insertion was 111 kgs and the minimum weight after one year from balloon insertion was 98 kgs with mean of 11.72 and the and the maximum weight was 132 kgs before balloon insertion and maximum weight loss one year after balloon insertion was 119 kgs with mean of 9.85 %.

Table 2: Weight loss of patients after balloon insertion.

		Weight of patients		Total % of weight loss
		Before balloon insertion	**After 12m from balloon insertion**	
Group I	**Male**			
	Minimum	99 kg	84 kg	15.16
	Maximum	126 kg	116 kg	7.94
	Female			
	Minimum	111 kg	98 kg	11.72
	Maximum	132 kg	119 kg	9.85
Group II	**Male**			
	Minimum	97 kg	71 kg	26.81
	Maximum	128 kg	101 kg	21.10
	Female			
	Minimum	116 kg	89 kg	23.28
	Maximum	135 kg	108 kg	20

For female patients, the minimum weight before balloon insertion was 116 kgs and minimum weight was 89 kgs one year after balloon insertion with mean of 23.28 % and the maximum weight for female patients was 135kgs before balloon insertion reached to 108kgs one year after balloon insertion with mean loss of 20%.

According to Debakey et al the replacement of air inside the balloon by saline not only affect the results of weight loss but also affect the patients complains specially in first few weeks.[12]

And according to Percival WL, all saline filled gastric balloons increase the weight loss and being maximum in first 6ms after balloon insertion, also according to Ponce J et al, the volume of injected saline of the re-inflatable gastric balloon affect the results of weight reduction.

From all these results, it was clear that in (group II) the mean of weight loss of male and female patients one year after balloon insertion was more than the mean of weight loss in male and female patients Percival WL in (group I) one year after balloon insertion.

CONCLUSION

From all these results, it was clear that in (group II) the mean of weight loss of male and female patients one year after balloon insertion was more than the mean of weight loss in male and female patients in (group I) one year after balloon insertion.

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