



# M30 and M65 levels as well as MPV, Adiponectin and Thiol-Disulphide Values are not Improving during Intra-gastric Balloon Placement Therapy in Morbid Obese Patients: A Single Center, Case Control Study

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## Abstract

**Background and Aim:** Intra-gastric Balloon (IGB) placement is an effective way for weight loss. However, the impact of IGB on some biomarkers is still unknown. We investigated the impact of IGB placement on these markers.

**Methods:** Thirty individuals undergoing IGB and 40 lean controls were enrolled. M30, M65, adiponectin and thiol- disulfide levels were measured at baseline and at the six months of IGB placement.

**Results:** At baseline, patients had significantly higher ALT, M30 and M65 levels compared to the controls. M30, M65, adiponectin, thiol- disulfide levels and MPV were all found to be similar at the beginning and end of the IGB therapy.

**Conclusion:** Our results revealed that IGB placement did not enhance the biomarkers of interest in the six months of follow up.

**Keywords:** Morbid Obesity; M30 level; M65 level; Adiponectin values; Thiol level; Disulphide level

## Abbreviations

NAFLD: Nonalcoholic Fatty Liver Disease; NASH: Nonalcoholic Steatohepatitis; IGB: Intra-gastric Balloon; BMI: Body Mass Index; ALT: Alanine Aminotransferases; AST: Aspartat Amino Transferases

## Introduction

Obesity and obesity-related co-morbidities including Non-Alcoholic Fatty Liver Disease (NAFLD) which varies from simple steatosis to Nonalcoholic Steatohepatitis (NASH) are important causes of liver related disease of burden worldwide [1,2]. NASH was reported to be seen in around 35% of the obese subjects, whereas it could elevate up to 90% of those undergoing bariatric surgeries [3]. Bariatric surgery and to a lesser extend Intra-gastric Balloon (IGB) placement may resolve the underlying NASH over time [4-6].

There are some promising candidates like M30 and/or M65 to predict the severity of underlying liver injury among obese patients, but none has enough accuracy to replace liver biopsy yet [7,8]. On the other side, a recently developed kit that measure thiol/disulfide equilibrium in serum could be an easy way to detecting underlying oxidative stress in obese patients [9].

In this study, we aimed to focus on the course of these popular none-invasive markers under

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**Table 1:** The differentiation of laboratory parameters during 6 months of intra-gastric balloon therapy in morbid obese patients.

	Month 0	Month 6	P value*
BMI, mean (SD), kg / m <sup>2</sup>	47,6 (8,2)	41,6 (7,9)	<0,001
ALT, mean (SD), IU/mL	28,1 (18,5)	20,4 (6,6)	0,016
AST, mean (SD), IU/mL	21,9 (8,7)	19,2 (6,8)	0,221
GGT, mean (SD), IU/mL	23,7 (12,9)	21,6 (16,4)	0,032
MPV, mean (SD), fL	8,3 (0,8)	8,5 (0,6)	0,500
HOMA-IR index, mean (SD)	4,1 (3,5)	3,5 (1,7)	0,225
Triglyceride, mean (SD), mg/dL	164,4 (84,5)	137,3 (107,8)	0,102
APRI index, mean (SD)	0,9 (0,07)	0,7 (0,02)	0,129
M30 level, mean (SD), U/L	535,5 (218,9)	559,9 (168,7)	0,621
M65 level, mean (SD), U/L	2595 (1379)	2625 (1096)	0,817
Adiponectin, mean (SD), µmol/ L	9629 (5887)	10,907 (9938)	0,583
Thiol, mean (SD), µsmol/ L	303 (141)	329 (114)	0,529
Disülphide, mean (SD), µmol/ L	16,5 (6,3)	15,6 (10,4)	0,729

\*p value lower than 0,05 was accepted as statistically significant

an effective obesity treatment- IGB- without pointing out their effectiveness on predicting underlying liver injury.

## Materials and Methods

This case control study included 30 obese patients (body mass index (BMI) >40 kg/m<sup>2</sup>) who underwent IGB (BioEnterics Intra-gastric Balloon) between February 2009 and April 2014 in our clinic. Informed consents were signed by each patient before enrollment to the study. The placement (month zero) and the removal (month six) of the IGB were performed by the same endoscopist (Z. Simsek). None of the patients had a history of heavy alcohol use (greater than 20 gr/day for man, 10 gr/day for woman) and all the laboratory tests for viral hepatitis, Wilson's disease, hemochromatosis and auto-immune hepatitis were negative.

Forty healthy controls were recruited from the patients seen to our outpatient dyspepsia clinic after getting written informed consents. They had no medical history of any other chronic disease including hypertension, diabetes mellitus or dyslipidemia. BMI values of the controls were all in normal ranges.

In addition to routine laboratory investigations, serum M30 and M65 levels (M30 and M65 Apoptosele Elisa, Peviva, Sweden), adiponectin and thiol/disulphid levels were measured. Serum samples were obtained before insertion of intra-gastric balloon and after removing of intra-gastric balloon via peripheral venous blood, and stored at -80°.

This study was approved by Diskapı Training and Research Hospital, local ethic committee, with the number and date of "09/32 and 02.04.2013".

## Statistics

SPSS 14 was used for statistical analyses and p value lower than 0.05 was accepted as statistical significance. Chi-square and Mann Whitney U tests were used in order to compare the parametric and non-parametric variables.

## Results

The mean BMI level, HOMA-IR index, triglyceride and ALT levels were found to be higher in patient group than controls; however, AST, GGT levels, Mean Platelet Volume (MPV) values, and the lipid profile except triglyceride was similar in each group (non-shown data).

After the six months of IGB placement therapy, BMI values decreased from 47.6 to 41.7 kg/m<sup>2</sup>, accompanied with ALT and GGT levels. However, surprisingly, serum M30, M65 levels, APRI index, MPV and triglyceride values, thiol and disulphide values did not decrease in the same time period (Table 1). Adiponectin levels stayed similar from the beginning to the end of the IGB placement as well.

We checked also the impact of high BMI reduction on laboratory parameters and we realized that none of the parameters including M30, M65, adiponectin, thiol and disulphide serum levels decreased by higher decline (≥ 10%) in BMI compared to lower (<10%) one (non-shown data).

In conclusion, even though ALT and GGT levels accompanied with BMI values prominently decreased after 6 months of IGB placement, neither M30 and M65 levels, nor MPV and thiol-disulphide values declined significantly.

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