



Original Research

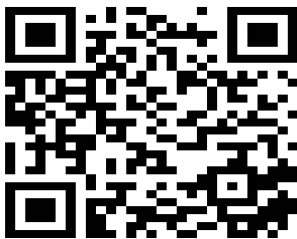
# Does Preoperative Anxiety Decrease When Obesity Is Eliminated?

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## Abstract:

**Aim:** To determine the effectiveness of weight loss with obesity surgery in reduction of preoperative anxiety by comparing the anxiety levels of the patients before undergoing One Anastomosis Gastric Bypass (OAGB) surgery and before their subsequent surgery.

**Material and Method:** Sixty patients undergoing OAGB and secondary operations who had gastrectomized were enrolled in the study. The patients were divided into two groups in such a way that the morbidly obese patients who underwent OAGB surgery were included in the Group 1 and the patients who lost weight with OAGB surgery and were then admitted for a second operation were included in the Group 2. The preoperative anxiety levels of all the patients were measured with the State-Trait Anxiety Inventory (STAI).

**Results:** The preoperative anxiety levels were found to be high in both groups. There were no statistically significant differences between the groups in terms of both state (STAI-S) ( $p=0.134$ ) and trait (STAI-T) measurements ( $p = 0.436$ ).

**Conclusion:** The preoperative anxiety levels did not decrease with weight loss indicated by reduction in BMI among the patients who underwent OAGB. It has been reported before that the preoperative anxiety as well as anxiety disorders are persistent in such patient groups. Thus, anxiety levels of patients who underwent bariatric surgery should be measured and managed before secondary other operations even if their BMI decreases.

**Keywords:** Obesity, Anesthesia, Anxiety, Preoperative Anxiety.

## Introduction:

Preoperative anxiety increases postoperative morbidity and mortality. Uncertainty about the outcome of surgical procedure creates an unpleasant feeling of fear and is a common problem associated with surgical procedures. The reasons for this anxiety include postoperative pain, increased personal dependence, and fear of not recovering from anesthesia or even death. This is a

problem that requires attention as it affects the length of stay in hospital and the development of secondary disorders (1).

Bariatric surgery is an effective method providing long-term weight loss for morbidly obese patients. These patients experience preoperative anxiety for both the obesity surgery and subsequent secondary reconstructive or elective operations. Morbidly obese patients also have higher rates of psychiatric

disorders, including depression and anxiety disorders. Various changes were reported in the frequency of these disorders with weight loss following obesity surgery (2,3). However, there are not any studies in the literature documenting the change in preoperative anxiety before a subsequent surgery after weight loss with a bariatric procedure.

Our hypothesis was that there was a 10% reduction in the state preoperative anxiety levels of the patients whose obesity was removed by surgery. The aim of this study was to find expected decrease in preoperative anxiety levels between primary obesity surgery and secondary surgeries like inguinal hernia, cholecystectomy, and plastic surgeries in patients with decreased BMI.

### Materials and Methods:

An approval from the Local Ethics Committee and written informed consent from all participants were obtained before commencing the study. A total of 68 patients aged between 18 and 60 years were included in the study. In the Group 1, there was 34 patients with BMI of  $> 40 \text{ kg/m}^2$ , who will undergo OAGB surgery. The Group 2 included 25 patients who had BMI of  $< 30 \text{ kg/m}^2$  and previously underwent OAGB surgery, who were to undergo a secondary operation. Nine patients were excluded from the study. Because 4 patients, had a BMI of  $> 30 \text{ kg/m}^2$  following the OAGB; two patients were operated without general anesthesia; and three patients underwent major surgery. Major surgery was defined as surgery in which a more extensive resection is performed, e.g. a body cavity was entered, organs are removed, or normal anatomy is altered.

The preoperative anxiety levels were measured with the State-Trait Anxiety Inventory (STAI) (4, 5). The STAI is a questionnaire consisting of 40 questions in two sections evaluating the trait (STAI-T) and state (STAI-S) of anxiety using 20 questions in each part. The least score is 20, and the maximum score is 80. Scores of  $\leq 37$ , 38-44, and  $\geq 45$  were considered as mild, moderate, and severe anxiety levels, respectively (6).

We predicted that there would be a difference of at least 4 units (10%) in STAI-S levels between the

groups. Therefore, in our 80% power analysis, at least 25 cases should have been included in each group. We planned 9 extra cases for each group. While the target was achieved in one group, we removed the cases that we should have excluded in the other group. The gathered data were analyzed using the SPSS 26.0 software by utilizing the Kolmogorov-Smirnov test, t-test, Chi-square and Kruskal Wallis tests. A p-value lower than 0.05 was considered statistically significant.

### Results:

In this study, 34 patients in the Group 1 were consecutively evaluated, of whom 4 patients were male and 30 females. The 26 patients in the Group 2 contained 6 males and 20 females. The patients' age ranged from 19 to 60 years. The demographic values and BMI are demonstrated in Table 1.

**Table I. Demographic data of patients in two groups. SD: Standart Deviation**

	Group 1	Group 2	p
Age $\pm$ SD (years)	37.4 $\pm$ 12.8	43.6 $\pm$ 8.6	0.11
Height $\pm$ SD (cm)	164.2 $\pm$ 7.9	164.7 $\pm$ 8.8	0.77
Weight $\pm$ SD (kg)	125 $\pm$ 22.9	77 $\pm$ 12.4	$< 0.01$
BMI $\pm$ SD ( $\text{kg/m}^2$ )	46.2 $\pm$ 6.4	27.3 $\pm$ 2.7	$< 0.01$

**Table II. STAI scores.  $p < 0.05$  is significant**

	STAI-S	STAI-T
Group 1	45.9 $\pm$ 4.8	45.9 $\pm$ 5.6
Group 2	44.1 $\pm$ 6.1	47.2 $\pm$ 4.9
p	0.188	0.358

The statistical analysis revealed that there was not a significant difference between the two groups in terms of the preoperative STAI-S and STAI-T levels. The patients were found to have high anxiety regarding both anxiety scores (Table 2). The rate of STAI-S score  $\geq 45$  points was 73.5% in

the Group 1 and 56% in the Group 2. The high trait anxiety (STAI-T) rate was determined as 64.7% in

the Group 1 and 72% in the Group 2 (Table 3).

**Table III. The anxiety level percentages in the groups (\* within the group, \*\* between the groups)  
p<0.05 is significant**

STAI S					
	0-37 points (n,%)	38-44 points (n,%)	45-80 points (n,%)	Total (n)	p
Group1 (n)	2 (5.9%)	7 (20.6%)	25 (73.5%)	34	0.134*
Group 2 (n)	4 (16%)	7 (28%)	14 (56.0%)	25	0.160**
STAI T					
Group1 (n)	3 (5.9%)	9 (26.5%)	22 (64.7%)	34	0.436
Group 2 (n)	0	7 (28%)	18 (72%)	25	0.554 **

### Discussion:

Preoperative anxiety is an unpleasant feeling created by the fear of the unknown. Anxiety, which is known to reduce immunity and delay healing, should be resolved after it is identified in the perioperative period (7). According to the results of the present study, which investigated the change in preoperative anxiety following weight loss, no significant difference was determined between the patients with high BMI who were to undergo obesity surgery and the patients who lost weight as a result of previous bariatric surgery.

The STAI is a reliable anxiety scale. The level of state anxiety aims to measure a temporary response, while trait anxiety refers to interpersonal differences in the responses given to stressful situations (8). The results of this study demonstrated that both types of anxiety were high in all groups.

Preoperative anxiety is experienced between 25% and 80% of patients undergoing surgical procedures (9, 10). Differences may be seen according to the type of surgery and anesthesia. A young age, female gender, lack of sleep, having surgery for the first time, a history of cancer, and gynaecological and aesthetic operations are factors that have been associated with the frequency and high levels of anxiety (9). The high level and frequency (73%) of state anxiety of the patients

who were to undergo OAGB can be explained by concerns that the surgery is high risk, and that there would be a change in the body image of the patient. While high STAI-T values may be an indicator of other underlying psychiatric disorders, the relationship between preoperative anxiety and preoperative psychiatric disorders should be investigated in these patients. In addition to these findings, the state anxiety levels of the patients who had lost weight with OAGB were also found to be high (56%). In a previous study in which the frequency of high preoperative anxiety for elective surgery has been found to be 50.8% for state anxiety and 56.1% for trait anxiety, it was thought that the anxiety of losing weight was close to that of the normal population (10). More than half of the patients in that study had multiple operations for aesthetic purposes and it was stated that the high frequency of preoperative anxiety could have been due to consecutive operations.

There are many studies in the literature that have examined the changes in depressive and anxiety disorders after weight loss in obese patients. It is an accepted view that there is a reduction in depressive disorders (11,12). However, anxiety symptoms have not shown such a large decrease (13,14). Although it has been reported that depression and anxiety disorders can cause

different effects with weight loss, the anxiety issue was not as well researched as depression (11). There is not any information in the current literature about the relationship between preoperative anxiety and weight loss.

Obesity increases the risk of depression, but depression is also a predictive factor of obesity. Hypothalamo-pituitary axis inflammation has been shown in the relationship between obesity and depression (15). However, there is no such hypothesis for anxiety disorders and obesity.

In a study, 107 bariatric surgery candidates divided into two diagnosis; depressive disorders included major depression and dysthymia, while anxiety disorders included agoraphobia, social phobia, specific phobias, obsessive compulsive disorder, post-traumatic stress disorder, and common anxiety disorder. In the 3-year postoperative follow up of these patients, it was reported that the frequency of depressive disorders decreased but there was no decrease in anxiety disorders. It was also noted that preoperative anxiety was significantly predictive for postoperative anxiety disorders (16).

Therefore, trait anxiety may be both a precursor and a result of persistent anxiety disorders. For the determination and treatment of preoperative anxiety, help may be required from psychiatry and thus recommendations can be taken for the restructuring of the mental health of these patients. Patients with anxiety disorder have also been found to be negatively affected by long-term weight loss (16-18). Therefore, in an effort to obtain better results, preoperative STAI-S measurement might be utilized as an indicator of psychiatric needs.

When the relationship between the increase in morbidity and preoperative anxiety in elective, non-major operations is considered, it is obvious that various methods to reduce anxiety are necessary. These include informing the patient thoroughly about the procedure, providing sequential information, using music and administering anti-anxiety drugs (19-22). In addition, for patients whose mental health does not improve with weight loss, postoperative recovery

and better mental health can be provided with psychiatric recommendations for re-structuring the causes of anxiety.

The results of the present study showed that preoperative anxiety did not change with weight loss. Although there was a reduction in the STAI-S scores, it was not statistically significant. Another finding of this study was that preoperative anxiety was high in both groups. Therefore, no relationship was found between weight loss and anxiety. However, the results obtained in our study emphasize that more attention should be paid to the preoperative anxiety of these patients and that there is a need to take precautions against anxiety in subsequent operations.

An important limitation of the study was the small number of patients included. Designing larger study that can produce results that eventually will be able to provide more quality evidence can be recommended. One-year weight loss, complications and general comorbidity reduction may be followed in next studies.

### **Conclusion:**

We found that weight loss indicated by reduced BMI did not decrease preoperative anxiety for subsequent surgeries in the patients who underwent OAGB. Therefore, anesthesia management should also include the measurement and treatment of preoperative anxiety in both morbidly obese patients who will undergo gastrectomy and those who are candidates for secondary operations who lost weight by undergoing sleeve gastrectomy surgery before, because their preoperative anxiety was found to be persistent despite BMI reduction.

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