

Impact of bariatric surgery on depression and anxiety :

A review

Abstract :

Obesity is a complex disease that effect large amount of population, According to WHO overweight and obesity defined as abnormal or excessive fat accumulation that put the patient heath at risk to develop multiple disease¹, The treatment options are lifestyle changes , diet control , medication , non surgical management and surgical management , some of those treatment are linked to clinical depression.

Aim : to look at the prevalence of depression post bariatric surgery

Methodology : We looked at published researches on internet about the prevalence of depression post bariatric surgery

Result : there is a significant association between bariatric surgery and prevalence of depression

Conclusion:

A full clinical and psychological assessment should be done prior to bariatric surgery to avoid depression

Key word: depression ,anxiety ,bariatric surgery, psychological assessment, heath

Introduction:

Obesity is a complex disease that effect large amount of population, According to WHO overweight and obesity defined as abnormal or

¹ <https://www.who.int/health-topics/obesity#tab=tab>

excessive fat accumulation that put the patient health at risk to develop multiple disease². The wide world obesity has tripled since 1975 and around 1.9 billion adults suffers from obesity(1).

Obesity is a serious disease and a major risk factor for noncommunicable disease such as cardiovascular disease, metabolic disease , musculoskeletal disease, physiological disorder and some cancers.

Obesity has linked to depression in multiple researches , R E Roberts looked at the association between obesity and depression, it was a 5 year observational study, he found that obesity was associated with increase risk of depression.³

A meta-analysis done at march 2010 about obesity and depression, they found that obesity at baseline increased the risk of depression.⁴

Despite the wide ranges of modalities to treat obesity still obesity consider one of the most common disease that affect the human life.

The treatment options are lifestyle changes , diet control , medication , non surgical management and surgical management .

In this literature review we are looking on the impact of bariatric surgery on depression and anxiety.

Literature review:

Helen booth and his colleagues did a research about the impact of bariatric surgery on clinical depression , that study was from 2002 to 2014 , A total of 3045 participants were involved with mean BMI of 44 KG/m² , 42% had gastric bypass . 16% sleeve gastrectomy and 42% laparoscopic gastric banding.

² <https://www.who.int/health-topics/obesity#tab=tab>

³ <https://www.nature.com/articles/0802204>

⁴ <https://jamanetwork.com/journals/jamapsychiatry/article-abstract/210608>

Before surgery 36% of the participants had clinical depression, in the second year post bariatric surgery 32% had depression , by the seventh year the prevalence of depression increased to 37%, the main findings of the research was that patient undergoing bariatric surgery have slight higher level of depression compared with other obese patient⁵ (4) .

A study was done by Yung-chieh Yen and his colleagues to look at psychiatric aspect of bariatric surgery, there purpose was to look at the prevalence of psychiatric disorders. The article reviews the psycho-pathological changes before and after bariatric surgery , there found that there is decrease in certain psychiatric symptoms after losing weight. However, the risk of multiple psychological disorder occurs specially in patient with unsuccessful weight loss. They concluded that there is high prevalence of psychiatric disorder among bariatric surgery candidates.⁶

Another systemic review done by Peterhansel which included 28 studies to look and estimate the rate of suicide for bariatric population, they estimated a suicide rate of 4.1/10000 person per year so they concluded that bariatric surgery patient show higher rate of suicidal attempts compared to general population⁷

A study was done to look at the outcomes of bariatric surgery in patient with depression disorder , the aim was to determine the impact of sleeve gastrectomy in patient suffering from depression, a total of 300 patient was involved , 253 of them (84%) completed follow up for three years , they found that (88%) patient of the depression group responded very well as there were optimistic and satisfied and only (7%) did not experience changes⁸

⁵ <https://www.sciencedirect.com/science/article/pii/S0165032714008362>

⁶ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4162326/>

⁷ <https://pubmed.ncbi.nlm.nih.gov/23297762/>

⁸ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6711535/>

Another study was done and raised an important question , dose laparoscopic sleeve gastrectomy improves depression ?, there were 75 participants who underwent laparoscopic sleeve gastrectomy , the depression scores improved from pre-operative to follow up (9 vs 6) as did stress score (8.7 +/- 4 to 6 +/- 4).⁹

Mesut sipahi did a research to look at the effects of sleeve gastrectomy operation on depression , anxiety and quality of life , the study included 34 morbid obese patient with BMI > 40, the result as shown in table 1

n (34)	mean+SD	min-max
BAI difference	6,1471+10,42	-28-28
BDI difference	9,4118+11,54	-4-37
PF difference	-8,5588+6,32	-20-0
PRF difference	-1,2647+2,15	-4-4
Pain difference	-2,1765+2,50	-7,4-2,6
GH difference	-6,7088+5,62	-14,4-4
Vitality difference	-7,4706+5,34	-17-5
SF difference	-2,5000+2,42	-6-3
ERF difference	-1,0882+1,58	-3-3
Mental Health difference	-6,3824+4,03	-14-2

SD; standard deviation, min; minimum, max; maximum, BAI:Beck anxiety inventory, BDI:Beck depression inventory, PF:physical functioning, PRF:physical role functioning, GH: General health perceptions, SF:Social role functioning, ERF:Emotional role functioning

Table 1: Data statistics

There were significant differences between pre and post operative in beck depression inventory , beck anxiety inventory and social role functioning at 6 months¹⁰

⁹ <https://pubmed.ncbi.nlm.nih.gov/27178406/>

¹⁰

https://www.researchgate.net/publication/328760791_EFFECTS_OF_SLEEVEGASTRECTOMY_OPERATION_ON_DEPRESSION_ANXIETY_AND_QUALITY_OF_LIFE

A study was done in Tehran to look at the changes in clinical depression following sleeve gastrectomy , 307 cases were involved and the result was increase in the prevalence of depression , 30.3% was the pre-operative compared with 37.7% post operative ¹¹

There was observation study , a prospective cohort study to evaluate the association of bariatric surgery with subsequent depression, the result was found that sleeve gastrectomy had lower incidence of depression compared to Roux-en Y gastric bypass . ¹²

Discussion

Over the last 20 years , bariatric surgery has gain a Hugh popularity especially sleeve gastrectomy , based on clinical study bariatric surgery is the best and most effect modalities of treatment for obesity ¹³. The surgical complication of sleeve gastrectomy and it has very good impact on patient health¹⁴

Variables	Before surgery	After surgery	p-Value
BMI	42.4 kg/m ² (±7.7; range, 30.8–65.2)	29.3 kg/m ² (±4.3; range, 23.5–35.2)	<.00001*
Diabetes	99 (32.2%)	86 (28.0%)	.0526
Hypertension	163 (53.0%)	147 (47.8%)	.09853
Dyslipidaemia	189 (61.5%)	133 (43.3%)	<.00001*
Anti-depressant drugs prescription	64 (20.8%)	75 (24.4%)	.14231
Good feelings about body size and weight	5 (1.6%)	268 (87.2%)	<.00001*
Clinical depression	93 (30.2%)	116 (37.7%)	.025*

*The result is significant at $p < .05$.

¹¹ <https://onlinelibrary.wiley.com/doi/full/10.1002/edm2.282>

¹² <https://www.nature.com/articles/s41366-019-0364-6>

¹³ <https://link.springer.com/article/10.1007%2Fs11695-019-03779-7>

¹⁴ <https://onlinelibrary.wiley.com/doi/epdf/10.1002/edm2.282>

Table 2: Pre and post surgery effect

However some of those Patient who underwent sleeve gastrectomy may suffer from clinical depression. As mention in most of literatures some patient might be at risk to develop severe clinical depression in which they attempt suicide , finding the predictive factors for sure would be helpful to prevent such a scenario.

There is some predictive factors that may associated with increase depression rate such as diabetes, unsuccessful weight loss¹⁵

Bariatric surgeries are linked to vitamin B deficiency , in sleeve gastrectomy 70%to 80% of stomach removed and those patient will be at risk for vitamin B deficiency¹⁶ , vitamins are necessary for life and play major role in health in particular vitamin B (1,3,6,9,12) are linked to depression¹⁷.

Conclusion:

A full clinical and psychological assessment should be done prior to bariatric surgery to identify those patient who are at risk to develop clinic depression and offer them better treatment.

Reference

- 1- <https://www.who.int/health-topics/obesity#tab=tab>

¹⁵

https://www.researchgate.net/publication/270765356_Impact_of_bariatric_surgery_on_clinical_depression_Interupted_time_series_study_with_matched_controls

¹⁶ <https://www.mdpi.com/2072-6643/13/4/1383/htm>

¹⁷ <https://pubmed.ncbi.nlm.nih.gov/27655070/>

- 2- <https://www.nature.com/articles/0802204>
- 3- <https://jamanetwork.com/journals/jamapsychiatry/article-abstract/210608>
- 4- <https://www.sciencedirect.com/science/article/pii/S0165032714008362>
- 5- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4162326/>
- 6- <https://pubmed.ncbi.nlm.nih.gov/23297762/>
- 7- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6711535/>
- 8- <https://pubmed.ncbi.nlm.nih.gov/27178406/>
- 9- https://www.researchgate.net/publication/328760791_EFFECTS_OF_SLEEVEGASTRECTOMY_OPERATION_ON_DEPRESSION_ANXIETY_AND_QUALITY_OF_LIFE
- 10- <https://onlinelibrary.wiley.com/doi/full/10.1002/edm2.282>
- 11- <https://www.nature.com/articles/s41366-019-0364-6>
- 12- <https://link.springer.com/article/10.1007%2Fs11695-019-03779-7>
- 13- <https://onlinelibrary.wiley.com/doi/epdf/10.1002/edm2.282>
- 14- https://www.researchgate.net/publication/270765356_Impact_of_bariatric_surgery_on_clinical_depression_Interrupted_time_series_study_with_matched_controls
- 15- <https://www.mdpi.com/2072-6643/13/4/1383/htm>
- 16- <https://pubmed.ncbi.nlm.nih.gov/27655070/>