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The effectiveness of vertical sleeve gastrectomy (VSG) in obesity – short-term follow-up study

Efektywność zabiegów rękawowej resekcji żołądka (VSG) w leczeniu otyłości – badanie krótkoterminowe

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Słowa kluczowe

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Conflict of interest

Konflikt interesów

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Summary

Introduction. Obesity has a great impact on patient's life quality and on worldwide healthcare. Patients are often exposed to a variety of treatment options for their disease and its associated comorbidities. Laparoscopic sleeve gastrectomy as one of the bariatric surgery methods, seems to provide a beneficial effect on patient's health.

Aim. The objective of performed study is assessment of postoperative body mass alterations in obese patients.

Material and methods. A retrospective study was performed on data obtained from 50 patients, who underwent sleeve gastrectomy between September 2015 to January 2017 at University Hospital of Białystok, Poland. The follow-up consisted of three visits at: 1, 3 and 6 months after the surgery. Body weight and fat mass was measured on each of the visits and %EWL (excess weight loss) and %change in fat mass were calculated for each follow-up time-point. Ethical approval to conduct the study was obtained from the Local Ethics Committee of Medical University of Białystok (R-I-002/546/2015).

Results. In all tested follow-up time-points we have found significant decrease in body weight ($p < 10e-06$) as well as fat mass loss ($p < 10e-06$). When compared differences in %EWL, there were no significant differences at any of the follow-up visits. We observed a similar lack of significance for %change in fat mass, except in the 3 months time point (F -23.44% and M -28.19%; $p = 0.02$).

Conclusions. In our study we show that VSG is an effective method of treatment of obesity in our cohort, in short-term follow up, with similar effectiveness of the procedure in men and women.

Streszczenie

Wstęp. Otyłość obecnie uznawana jest za globalny problem zdrowotny. Pacjentom oferowane są różne metody leczenia otyłości i związanych z nią powikłań. Jak dotąd operacje bariatryczne są najskuteczniejsze w zwalczaniu otyłości. Jedną z najczęściej stosowanych operacji jest pionowa rękawowa resekcja żołądka (VSG).

Cel pracy. Analiza zmian masy ciała u pacjentów z otyłością po przebytych zabiegu bariatrycznym typu VSG.

Materiał i metody. Grupę badaną stanowiło 50 pacjentów po przebytych zabiegu VSG w okresie od września 2015 do stycznia 2017 roku, na terenie Uniwersyteckiego Szpitala Klinicznego w Białymstoku. Badanie uzyskało zgodę komisji bioetycznej Uniwersytetu Medycznego w Białymstoku (R-I-002/546/2015).

Wyniki. We wszystkich wizytach follow-up (1, 3, 6 miesięcy po zabiegu) zaobserwowano istotną statystycznie redukcję masy ciała ($p < 10e-06$) oraz redukcję masy tkanki tłuszczowej ($p < 10e-06$). Nie stwierdzono istotnych statystycznie różnic, porównując wartości %EWL w okresie 1, 3 i 6 miesięcy od zabiegu. Stwierdzono brak istotności statystycznej w redukcji ilości tkanki tłuszczowej (%), poza 3-miesięcznym okresem po przeprowadzonym zabiegu (K -23,44% i M -28,19%; $p = 0,02$).

Wnioski. Przeprowadzone badanie wykazało, iż w danej populacji VSG jest efektywną metodą leczenia otyłości, z podobną skutecznością zarówno u kobiet, jak i u mężczyzn.

INTRODUCTION

Development of obesity is strictly connected with significantly greater risk of co-morbidities occurrence, such as cardiovascular diseases, hypertension, hyperlipidemia (1), type 2 diabetes (2), cancer (3), what have an effect on patient's quality of life and lifespan (4). An effective interventions are essential for mitigating obesity related conditions and diminishing related morbidity and mortality (5). In the recent years, the evidence for effectiveness and safety of bariatric procedures in obese patients has increased (6). Currently, one of the most popular surgical interventions for the treatment of obesity and related conditions is laparoscopic sleeve gastrectomy (7).

AIM

The objective of our study is to present weight alterations in patients, who underwent sleeve gastrectomy and to evaluate the effectiveness of VSG as a stand-alone bariatric procedure for obese patients, in short-term follow-up.

MATERIAL AND METHODS

Study sample

A retrospective study was performed on data obtained from 50 patients, who underwent sleeve gastrectomy between September 2015 to January 2017 at University Hospital of Bialystok, Poland. Patients' eligibility to bariatric surgery has been assessed by qualified surgeon. Ethical approval to conduct the study was obtained from the Local Ethics Committee of Medical University of Bialystok (R-I-002/546/2015). Written informed consent was obtained from all patients before the acquisition of study measurements.

Outcome measures

Body weight and total fat mass were assessed using dual-energy X-ray absorptiometry (DXA). Records of patients such as mean weight and mean fat mass values were compared before bariatric surgery and at the specified follow-up times (1, 3, 6 months).

Statistical analysis

To compare differences in body weight and fat mass between different time points (before surgery vs. 1 month; before surgery vs. 3-month; before surgery vs. 6-month; 1-month vs. 3-month; 3-month vs. 6-months) we used generalized linear mixed models, fit under a Gamma distribution with age and patients ID as random effects. To compare differences in %EWL (excess weight loss) = $[(\text{Initial Weight} - \text{Postop. Weight}) / (\text{Initial Weight} - \text{Ideal Weight})] \times 100$ and %change in fat mass = $[(\text{fat mass after surg.} - \text{fat mass before surg.}) / \text{fat mass before surg.}] \times 100$ in each follow-up time point between men and women, we used generalized linear mixed models, fit under a Gaussian distribution with age as random effects. A p value < 0.05 was con-

sidered statistically significant. All analyses were performed using R software.

RESULTS

Baseline profile

The mean age of the patients was 49.65 ± 11.14 years. There were 25 males and 25 females. The mean BMI of patients before surgery was 45.30 ± 7.82 kg/m².

Postoperative weight alterations

The mean change in body weight one month after surgery was a decrease of 12.36 kg ($p < 10e-06$), 3 months after surgery was -21.12 kg ($p < 10e-06$), and 6 months after surgery was -28.8 kg ($p < 10e-06$). The mean difference in body weight between one and 3 months after surgery was -8.71 ($p < 10e-06$), and between three and 6 months was -7.04 ($p < 10e-06$) (fig. 1).

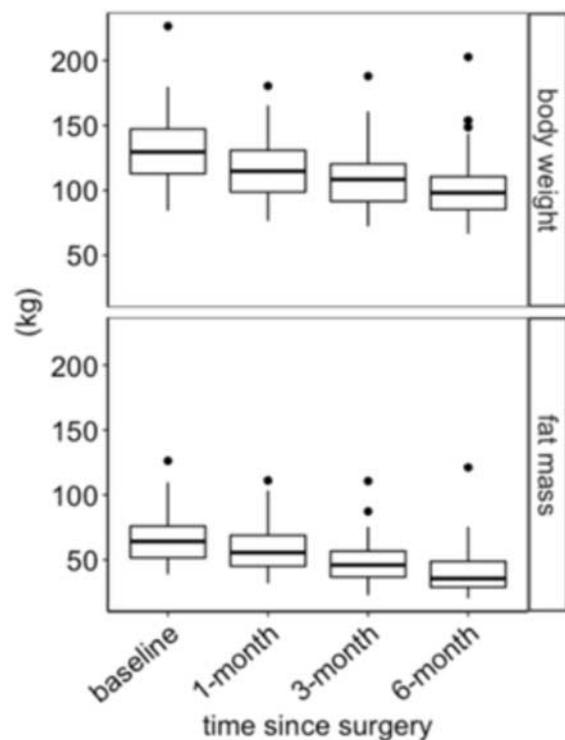


Fig. 1. Body weight and fat mass following surgery

Similar analysis on changes in fat mass also showed significant results, with a mean change one month after surgery of -6.71 kg ($p < 10e-06$), for 3 months after surgery -15.07 kg ($p < 10e-06$) and for 6 months after surgery -23.27 kg ($p < 10e-06$). The mean difference in fat mass between one and 3 months after the surgery was -8.86 ($p < 10e-06$), and the between 3 and 6 months was -7.23 ($p < 10e-06$), showing that the changes in body weight were mostly associated with loss of fat mass (fig. 1).

We did not observe any significant differences between males and females at any of the follow-up time points. We observed a similar lack of significance for % change in fat mass, except in the 3 months time point (F -23.44% and M -28.19%; $p = 0.02$) (fig. 2).

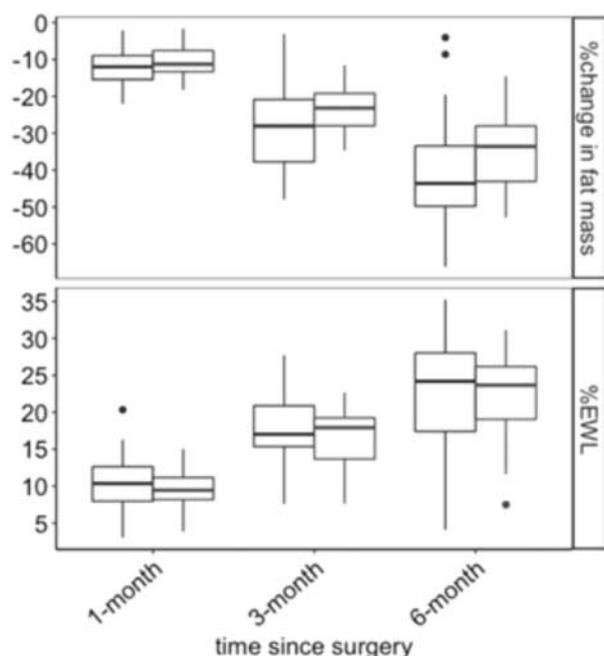


Fig. 2. %EWL and %change in fat mass following surgery for men and women

DISCUSSION

This study compares the 1, 3, 6 months results of VSG, focusing on excess weight loss (%), in

an attempt to evaluate the weight loss effectiveness of VSG as a stand-alone bariatric procedure for obese patients. Many studies have proven the short- and long-term efficiency of VSG with regard to total body mass loss, remission of co-morbidities, and postoperative complications (8-11). Some studies show the tendency toward body mass regain in a long follow-up point (8), therefore further long-term studies are required. In our Polish cohort we confirmed those findings, showing significant changes in body weight in short-term follow-up, and parallel changes in fat mass loss. Interestingly, in our cohort, we did not find significant differences in changes in the body weight between men and women, with similar observation for changes in fat mass (except the difference at 3 months time point).

CONCLUSIONS

To conclude, our study of postoperative body mass alterations in obese patients who underwent VSG shows great effectiveness of the procedure in short-term follow-up, with similar effectiveness in men and women. We have shown that bariatric procedures in obese patients are effective in weight loss and therefore should be considered when patients meet surgical criteria.

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